

=> fil reg

FILE 'REGISTRY' ENTERED AT 10:44:19 ON 01 FEB 2007  
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(FILE 'HOME' ENTERED AT 08:56:20 ON 01 FEB 2007)

FILE 'REGISTRY' ENTERED AT 08:57:05 ON 01 FEB 2007

D SAV

ACT WEI464AP/A

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L1 44 SEA (7704-34-9/BI OR 105-37-3/BI OR 105-53-3/BI OR

-----  
ACT WEI464/A

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L2 SCR 2043

L3 SCR 1312

L4 SCR 900

L5 SCR 2016 OR 2026

L6 SCR 1918 OR 1992 OR 2021 OR 1700 OR 1304

L7 STR

L8 230762 SEA SSS FUL L7 AND L3 AND L4 NOT (L2 OR L5 OR L6)

-----

L9 12 SEA L1 AND L8

L10 1 SEA 111-96-6/RN

L11 1 SEA 112-36-7/RN

L12 1 SEA 112-49-2/RN

L13 1 SEA 4499-99-4/RN

L14 1 SEA 1072-57-7/RN

L15 1 SEA 646-06-0/RN

L16 1 SEA 1072-47-5/RN

L17 1 SEA "1,3-DIOXOLANE, 4,5-DIETHYL-"/CN

L18 1 SEA "1,3-DIOXOLANE, 4-ETHYL-"/CN

L19 1 SEA "LITHIUM PERCHLORATE"/CN

L20 1 SEA "LITHIUM TETRAFLUOROBORATE"/CN

L21 1 SEA "LITHIUM HEXAFLUOROPHOSPHATE"/CN

L22 1 SEA "LITHIUM TRIFLUOROMETHANESULFONATE"/CN

L23 1 SEA C2HF6NO4S2.LI/MF

L24 1 SEA 7439-93-2/RN

L25 1 SEA 74432-42-1/RN

L26 1 SEA "DIMETHYL MALONATE"/CN

L27 STR

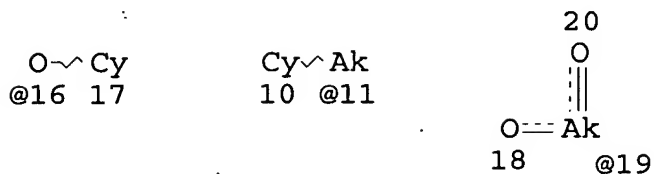
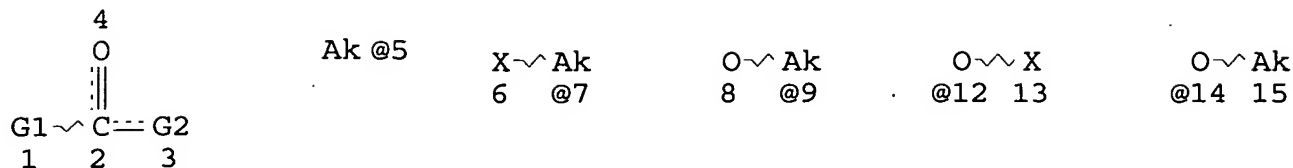
L28 50 SEA SUB=L8 SSS SAM L27  
L29 STR  
L30 50 SEA SUB=L8 SSS SAM (L27 NOT L29)  
L31 1179 SEA SUB=L8 SSS FUL (L27 NOT L29)  
SAV L31 WEI464S1/A

FILE 'HCAPLUS' ENTERED AT 10:00:55 ON 01 FEB 2007

L32 125669 SEA L24 OR (LITHIUM OR LI) (2A) (SALT# OR METAL? OR ION#)  
L33 18824 SEA (L19 OR L20 OR L21 OR L22 OR L23)  
L34 7153 SEA (L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16 OR  
L17 OR L18)  
L35 386398 SEA L8  
L36 15075 SEA L31  
L37 4104 SEA L26  
L38 823 SEA (L32 OR L33) AND L34  
L39 144 SEA L38 AND L35  
L40 2 SEA L39 AND L36  
L41 1 SEA L39 AND L37  
L42 121 SEA L39 AND L33  
L43 QUE ELECTROLY?  
L44 90 SEA L42 AND L43  
L45 QUE NON(W) (AQUEOUS? OR AQ# OR WATER? OR H2O) OR NONAQ#  
OR NONAQUEOUS?  
L46 42 SEA L44 AND L45  
L47 974 SEA POLYGLYME# OR GLYME#  
L48 29 SEA (L32 OR L33) AND L37  
L49 0 SEA L48 AND L47  
L50 15931 SEA DIOXOLANE#  
L51 1 SEA L48 AND L50  
L52 41 SEA L46 NOT (L41 OR L40)  
L53 28 SEA L48 NOT (L41 OR L40 OR L52)

=> d l31 que stat

L2 SCR 2043  
L3 SCR 1312  
L4 SCR 900  
L5 SCR 2016 OR 2026  
L6 SCR 1918 OR 1992 OR 2021 OR 1700 OR 1304  
L7 STR



VAR G1=5/7/9/11/19

VAR G2=OH/12/14/16

NODE ATTRIBUTES:

CONNECT IS E1 RC AT 5  
 CONNECT IS E2 RC AT 7  
 CONNECT IS E2 RC AT 9  
 CONNECT IS E2 RC AT 11  
 CONNECT IS E3 RC AT 19

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 5  
 GGCAT IS SAT AT 7  
 GGCAT IS SAT AT 9  
 GGCAT IS UNS AT 10  
 GGCAT IS SAT AT 11  
 GGCAT IS UNS AT 17

DEFAULT ECLEVEL IS LIMITED

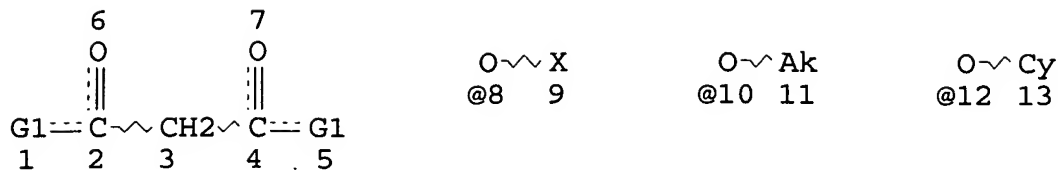
ECOUNT IS M1-X3 C AT 5  
 ECOUNT IS M1-X3 C AT 7  
 ECOUNT IS M1-X3 C AT 9  
 ECOUNT IS M1-X3 C AT 11

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 20

STEREO ATTRIBUTES: NONE

L8      230762 SEA FILE=REGISTRY SSS FUL L7 AND L3 AND L4 NOT (L2 OR L5  
          OR L6)  
 L27      STR



VAR G1=OH/8/10/12

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 13

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 13

STEREO ATTRIBUTES: NONE

L29 STR

C $\equiv$ C

1 2

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 2

STEREO ATTRIBUTES: NONE

L31 1179 SEA FILE=REGISTRY SUB=L8 SSS FUL (L27 NOT L29)

100.0% PROCESSED 16535 ITERATIONS

1179 ANSWERS

SEARCH TIME: 00.00.01

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 10:44:38 ON 01 FEB 2007

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## Request I

=&gt; d l41 cbib abs fhitstr hitind

L41 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2004:412653 Document No. 140:409655 Nonaqueous electrolytic solution  
 for lithium battery. Kim, Ju-Yup; Cho, Myung-Dong; Ryu, Young-Gyoon  
 (Samsung SDI Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US  
 2004096750 A1 20040520, 12 pp. (English). CODEN: USXXCO.  
 APPLICATION: US 2003-669464 20030925. PRIORITY: KR 2002-71397  
 20021116.

AB A nonaq. electrolytic solution and a lithium battery employing the same  
 are provided. The nonaq. electrolyte solution that contains a  
 substituted or unsubstituted acetate can effectively stabilize  
**lithium metal** and improve the conductivity of  
**lithium ions**.

IT 111-96-6, Diethyleneglycol dimethyl ether  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolytic solution for lithium battery)

RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)

$$\text{MeO}-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{OMe}$$

IC ICM H01M010-40  
 ICS H01M004-58; H01M004-48; H01M004-40

INCL 429326000; 429332000; 429218100; 429231950; 429231100

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 71-43-2D, Benzene, organic solvents containing monofluoro derivs.  
 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate  
 110-71-4 111-96-6, Diethyleneglycol dimethyl ether  
 112-36-7, Diethyleneglycol diethyl ether 112-49-2,  
 Triethyleneglycol dimethyl ether 463-79-6D, Carbonic acid, ester  
 616-38-6, Dimethyl carbonate 646-06-0, 1,3-Dioxolane  
 872-36-6, Vinylene carbonate 1072-47-5,  
 4-Methyl-1,3-dioxolane 1072-57-7 4499-99-4,  
 Triethyleneglycol diethyl ether 7439-93-2, Lithium, uses  
 7440-44-0D, Carbon, sulfur compound, polymer 7704-34-9, Sulfur, uses  
 7704-34-9D, Sulfur, carbon compound, polymer 12137-46-1, Kasolite  
 21324-40-3, Lithium hexafluorophosphate 25322-68-3, Peo  
 29921-38-8, 4-Ethyl-1,3-dioxolane 31371-55-8, Ethane,  
 1,2-dimethoxy-, homopolymer 73506-93-1, Diethoxyethane  
 74432-42-1, Lithium polysulfide 183140-14-9, 1,3-Dioxetan-2-one  
 676610-04-1

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolytic solution for lithium battery)

IT 105-37-3 105-53-3, Diethyl malonate  
105-54-4 106-70-7 108-59-8, Dimethyl malonate  
109-21-7 123-66-0 554-12-1 590-01-2  
623-42-7 626-82-4 1190-39-2, DiButyl malonate  
6186-89-6, Ethylmethyl malonate 17373-84-1,  
Butylethyl malonate 79546-83-1, Butylmethyl malonate  
90076-65-6

RL: MOA (Modifier or additive use); USES (Uses)  
(nonaq. electrolytic solution for lithium battery)

# Request II

=> d 140 cbib abs hitstr hitind 1-2

L40 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2007 ACS on STN  
2005:141077 Document No. 142:219415 Process for preparing  
acylphosphines and derivatives thereof. Sommerlade, Reinhard H.;  
Boulmaaz, Souad; Wolf, Jean-Pierre; Geier, Jens; Gruetzmacher,  
Hansjoerg; Scherer, Markus; Schoenberg, Hartmut; Stein, Daniel;  
Murer, Peter; Burkhardt, Stephan (Ciba Specialty Chemicals Holding  
Inc., Switz.). PCT Int. Appl. WO 2005014605 A1 20050217, 59 pp.  
DESIGNATED STATES: W: AE, AG, AL, ~~AM~~, AT, AU, AZ, BA, BB, BG, BR,  
BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL,  
SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW;  
RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA,  
GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR.  
(English). CODEN: PIXXD2. APPLICATION: WO 2004-EP51427 20040709.  
PRIORITY: EP 2003-405551 20030718.

AB The present invention relates to a new, selective process for the  
preparation of mono- and bisacylphosphines,  $(R_1)[\{(R_3)_2-m\}\{C(O)R_2\}_mP]_n$   
(n, m = independent from each other 1, 2; R<sub>1</sub>, if n = 1, is e.g. Ph  
R<sub>1</sub>, if n = 2, is e.g. C<sub>1</sub>-C<sub>18</sub>alkylene or phenylene; R<sub>2</sub> is e.g.  
C<sub>1</sub>-C<sub>18</sub>alkyl, Ph or substituted phenyl; R<sub>3</sub> is e.g. C<sub>1</sub>-C<sub>18</sub> alkyl), by  
(1) reacting a phosphorous halide, phosphorous halide oxide, or  
phosphorous halide sulfide with an alkali metal in a solvent in the  
presence of a proton source; (2) subsequent reaction with acid  
halides; an oxidation step may follow to obtain mono- and  
bisacylphosphine oxides or mono- and bisacylphosphine sulfides.  
Thus, metalation of PhPCl<sub>2</sub> with Na in PhMe followed by  
protonation/reduction with t-BuOH, acylation with 2,4,6-trimethylbenzoyl  
chloride, and oxidation with H<sub>2</sub>O<sub>2</sub> gave 75.7% bis(2,4,6-

trimethylbenzoyl)phenylphosphine oxide.

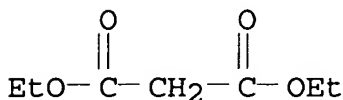
IT 105-53-3, Diethyl malonate 7439-93-2, Lithium, reactions

RL: RGT (Reagent); RACT (Reactant or reagent)

(process for preparation of acylphosphines and derivs. starting with halophosphine metalation, protonation/reduction, acylation, and oxidation)

RN 105-53-3 HCAPLUS

CN Propanedioic acid, diethyl ester (9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS

CN Lithium (CA INDEX NAME)

Li

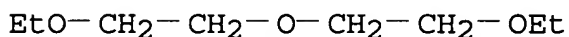
IT 112-36-7, Diethylene glycol diethyl ether

RL: NUU (Other use, unclassified); USES (Uses)

(solvent; process for preparation of acylphosphines and derivs. starting with halophosphine metalation, protonation/reduction, acylation, and oxidation)

RN 112-36-7 HCAPLUS

CN Ethane, 1,1'-oxybis[2-ethoxy- (9CI) (CA INDEX NAME)



IC ICM C07F009-50

CC 29-7 (Organometallic and Organometalloidal Compounds)

IT 64-17-5, Ethanol, reactions 64-19-7, Acetic acid, reactions  
 67-63-0, Isopropanol, reactions 75-65-0, tert-Butanol, reactions  
 75-85-4 75-91-2 76-84-6, Triphenylmethanol 77-74-7,  
 3-Methyl-3-pentanol 78-69-3, 3,7-Dimethyl-3-octanol 79-21-0,  
 Ethaneperoxoic acid 91-20-3, Naphthalene, reactions 100-86-7,  
 2-Methyl-1-phenyl-2-propanol 102-82-9, Tributylamine 103-05-9,  
 2-Methyl-4-phenyl-2-butanol 105-53-3, Diethyl malonate  
 107-41-5, Hexylene glycol 108-16-7, 1-Dimethylamino-2-propanol  
 109-02-4, N-Methylmorpholine 110-18-9, TMEDA 110-71-4, DME  
 110-89-4, Piperidine, reactions 110-91-8, Morpholine, reactions

121-44-8, Triethylamine, reactions 122-39-4, Diphenylamine, reactions 127-08-2, Potassium acetate 127-19-5, N,N-Dimethylacetamide 140-29-4, Phenylacetonitrile 597-49-9, 3-Ethyl-3-pentanol 600-36-2, 2,4-Dimethyl-3-pentanol 626-67-5, N-Methylpiperidine 865-47-4 865-48-5 1310-58-3, Potassium hydroxide, reactions 1310-73-2, Sodium hydroxide, reactions 1313-60-6, Disodium dioxide 1632-73-1, Fenchyl alcohol 1907-33-1 2217-02-9 6309-30-4, Tributylamine hydrochloride 7226-23-5, DMPU 7439-93-2, Lithium, reactions 7440-66-6, Zinc, reactions 7447-41-8, Lithium chloride, reactions 7722-84-1, Hydrogen peroxide, reactions 7758-89-6, Copper(I) chloride 16853-85-3, Lithium aluminum hydride

RL: RGT (Reagent); RACT (Reactant or reagent)

(process for preparation of acylphosphines and derivs. starting with halophosphine metalation, protonation/reduction, acylation, and oxidation)

IT 71-43-2, Benzene, uses 95-47-6, o-Xylene, uses 98-82-8, Isopropylbenzene 100-41-4, Ethylbenzene, uses 106-42-3, p-Xylene, uses 108-38-3, m-Xylene, uses 108-67-8, Mesitylene, uses 108-88-3, Toluene, uses 112-36-7, Diethylene glycol diethyl ether 119-64-2, 1,2,3,4-Tetrahydronaphthalene 1330-20-7, Xylene, uses 38888-98-1, Diphenylethane

RL: NUU (Other use, unclassified); USES (Uses)

(solvent; process for preparation of acylphosphines and derivs. starting with halophosphine metalation, protonation/reduction, acylation, and oxidation)

L40 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2007 ACS on STN

2004:412653 Document No. 140:409655 Nonaqueous electrolytic solution for lithium battery. Kim, Ju-Yup; Cho, Myung-Dong; Ryu, Young-Gyoon (Samsung SDI Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2004096750 A1 20040520, 12 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-669464 20030925. PRIORITY: KR 2002-71397 20021116.

AB A nonaq. electrolytic solution and a lithium battery employing the same are provided. The nonaq. electrolyte solution that contains a substituted or unsubstituted acetate can effectively stabilize lithium metal and improve the conductivity of lithium ions.

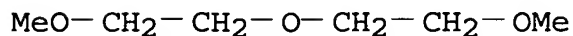
IT 111-96-6, Diethyleneglycol dimethyl ether 112-36-7, Diethyleneglycol diethyl ether 112-49-2, Triethyleneglycol dimethyl ether 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 1072-57-7 4499-99-4, Triethyleneglycol diethyl ether 7439-93-2, Lithium, uses 21324-40-3, Lithium hexafluorophosphate 29921-38-8, 4-Ethyl-1,3-dioxolane 676610-04-1

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic solution for lithium battery)

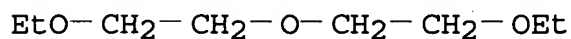
RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



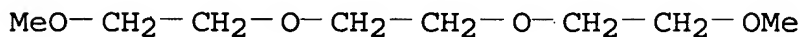
RN 112-36-7 HCAPLUS

CN Ethane, 1,1'-oxybis[2-ethoxy- (9CI) (CA INDEX NAME)



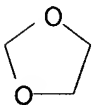
RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



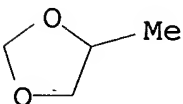
RN 646-06-0 HCAPLUS

CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



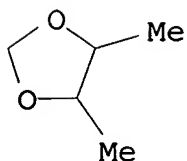
RN 1072-47-5 HCAPLUS

CN 1,3-Dioxolane, 4-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



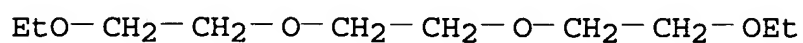
RN 1072-57-7 HCAPLUS

CN 1,3-Dioxolane, 4,5-dimethyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4499-99-4 HCAPLUS

CN 3,6,9,12-Tetraoxatetradecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



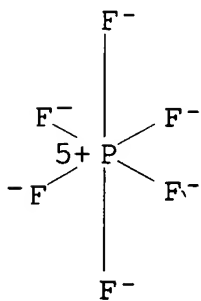
RN 7439-93-2 HCAPLUS

CN Lithium (CA INDEX NAME)

Li

RN 21324-40-3 HCAPLUS

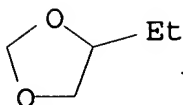
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



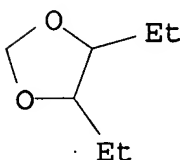
● Li<sup>+</sup>

RN 29921-38-8 HCAPLUS

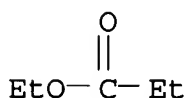
CN 1,3-Dioxolane, 4-ethyl- (8CI, 9CI) (CA INDEX NAME)



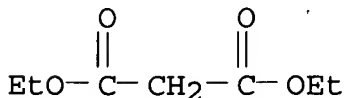
RN 676610-04-1 HCAPLUS  
 CN 1,3-Dioxolane, 4,5-diethyl- (9CI) (CA INDEX NAME)



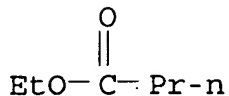
IT 105-37-3 105-53-3, Diethyl malonate  
 105-54-4 108-59-8, Dimethyl malonate  
 109-21-7 554-12-1 590-01-2  
 623-42-7 1190-39-2, DiButyl malonate  
 6186-89-6, Ethylmethyl malonate 17373-84-1,  
 Butylethyl malonate 79546-83-1, Butylmethyl malonate  
 90076-65-6  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolytic solution for lithium battery)  
 RN 105-37-3 HCAPLUS  
 CN Propanoic acid, ethyl ester (CA INDEX NAME)



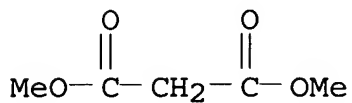
RN 105-53-3 HCAPLUS  
 CN Propanedioic acid, diethyl ester (9CI) (CA INDEX NAME)



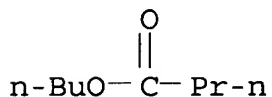
RN 105-54-4 HCAPLUS  
 CN Butanoic acid, ethyl ester (CA INDEX NAME)



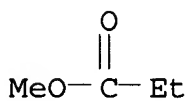
RN 108-59-8 HCAPLUS  
CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



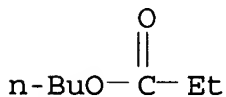
RN 109-21-7 HCAPLUS  
CN Butanoic acid, butyl ester (CA INDEX NAME)



RN 554-12-1 HCAPLUS  
CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)

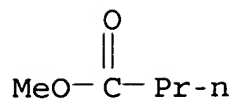


RN 590-01-2 HCAPLUS  
CN Propanoic acid, butyl ester (9CI) (CA INDEX NAME)

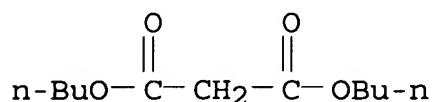


RN 623-42-7 HCAPLUS  
CN Butanoic acid, methyl ester (9CI) (CA INDEX NAME)

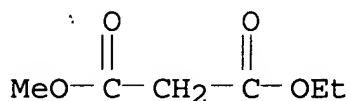




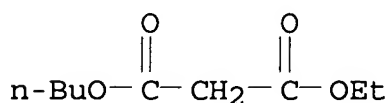
RN 1190-39-2 HCAPLUS  
CN Propanedioic acid, dibutyl ester (9CI) (CA INDEX NAME)



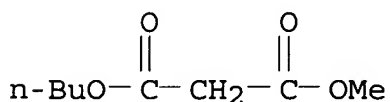
RN 6186-89-6 HCAPLUS  
CN Propanedioic acid, ethyl methyl ester (9CI) (CA INDEX NAME)



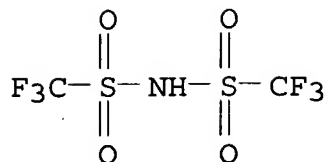
RN 17373-84-1 HCAPLUS  
CN Propanedioic acid, butyl ethyl ester (9CI) (CA INDEX NAME)



RN 79546-83-1 HCAPLUS  
CN Propanedioic acid, butyl methyl ester (9CI) (CA INDEX NAME)



RN 90076-65-6 HCAPLUS  
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40  
 ICS H01M004-58; H01M004-48; H01M004-40  
 INCL 429326000; 429332000; 429218100; 429231950; 429231100  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 IT 71-43-2D, Benzene, organic solvents containing monofluoro derivs.  
 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate  
 110-71-4 111-96-6, Diethyleneglycol dimethyl ether  
 112-36-7, Diethyleneglycol diethyl ether 112-49-2,  
 Triethyleneglycol dimethyl ether 463-79-6D, Carbonic acid, ester  
 616-38-6, Dimethyl carbonate 646-06-0, 1,3-Dioxolane  
 872-36-6, Vinylene carbonate 1072-47-5,  
 4-Methyl-1,3-dioxolane 1072-57-7 4499-99-4,  
 Triethyleneglycol diethyl ether 7439-93-2, Lithium, uses  
 7440-44-0D, Carbon, sulfur compound, polymer 7704-34-9, Sulfur, uses  
 7704-34-9D, Sulfur, carbon compound, polymer 12137-46-1, Kasolite  
 21324-40-3, Lithium hexafluorophosphate 25322-68-3, Peo  
 29921-38-8, 4-Ethyl-1,3-dioxolane 31371-55-8, Ethane,  
 1,2-dimethoxy-, homopolymer 73506-93-1, Diethoxyethane  
 74432-42-1, Lithium polysulfide 183140-14-9, 1,3-Dioxetan-2-one  
 676610-04-1  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolytic solution for lithium battery)  
 IT 105-37-3 105-53-3, Diethyl malonate  
 105-54-4 106-70-7 108-59-8, Dimethyl malonate  
 109-21-7 123-66-0 554-12-1 590-01-2  
 623-42-7 626-82-4 1190-39-2, DiButyl malonate  
 6186-89-6, Ethylmethyl malonate 17373-84-1,  
 Butylethyl malonate 79546-83-1, Butylmethyl malonate  
 90076-65-6  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolytic solution for lithium battery)

Request III - limited by "electroly?" and "nonaqueous, etc"

=> d 152 cbib abs hitstr hitind 1-41

L52 ANSWER 1 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2006:1256691 Document No. 146:30080 **Nonaqueous**

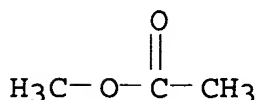
**electrolytic** solution for electrochemical cells. Xu, Wu; Deng, Zhongyi; Prabhu, Vaikunth S.; Bolomey, Pascal (Ferro Corporation, USA). PCT Int. Appl. WO 2006127192 A2 20061130, 19pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IS, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2006-US15294 20060424. PRIORITY: US 2005-138769 20050526.

AB The invention relates to the use of an amine oxide as an additive in a **nonaq. electrolytic** solution The **electrolytic** solution is suitable for use in electrochem. cells such as lithium batteries and **lithium ion** batteries. Batteries using this **electrolyte** solution have long life and high capacity retention.

IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 105-54-4, Ethyl butyrate 105-66-8, Propyl butyrate 106-36-5, Propyl propionate 109-21-7, Butyl butyrate 109-60-4, Propyl acetate 123-86-4, Butyl acetate 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 590-01-2, Butyl propionate 623-42-7, Methyl butyrate 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate  
RL: TEM (Technical or engineered material use); USES (Uses) (**nonaq. electrolytic** solution for electrochem. cells)

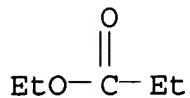
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



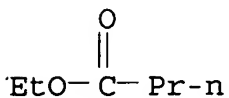
RN 105-37-3 HCAPLUS

CN Propanoic acid, ethyl ester (CA INDEX NAME)



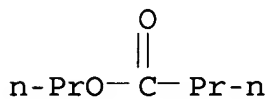
RN 105-54-4 HCAPLUS

CN Butanoic acid, ethyl ester (CA INDEX NAME)



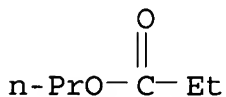
RN 105-66-8 HCAPLUS

CN Butanoic acid, propyl ester, diethyl ester (CA INDEX NAME)



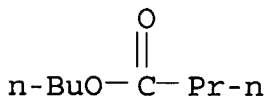
RN 106-36-5 HCAPLUS

CN Propanoic acid, propyl ester (CA INDEX NAME)



RN 109-21-7 HCAPLUS

CN Butanoic acid, butyl ester (CA INDEX NAME)



RN 109-60-4 HCAPLUS

CN Acetic acid, propyl ester (CA INDEX NAME)

n-Pr-O-Ac

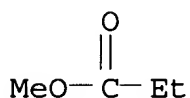
RN 123-86-4 HCAPLUS  
CN Acetic acid, butyl ester (8CI, 9CI) (CA INDEX NAME)

n-Bu-O-Ac

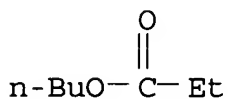
RN 141-78-6 HCAPLUS  
CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)

Et-O-Ac

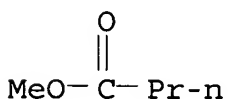
RN 554-12-1 HCAPLUS  
CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)



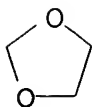
RN 590-01-2 HCAPLUS  
CN Propanoic acid, butyl ester (9CI) (CA INDEX NAME)



RN 623-42-7 HCAPLUS  
CN Butanoic acid, methyl ester (9CI) (CA INDEX NAME)



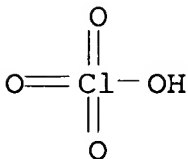
RN 646-06-0 HCAPLUS  
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

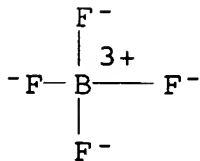
Li

RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



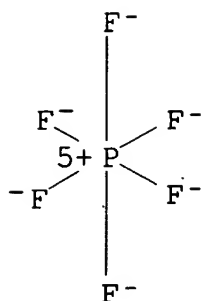
● Li

RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



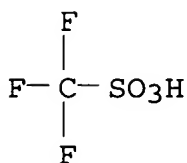
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery **nonaq electrolytic** soln amine oxide additive  
 IT Amine oxides  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (bis(hydrogenated rape-oil alkyl)methyl; **nonaq. electrolytic** solution for electrochem. cells)  
 IT Amine oxides  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (coco alkyl, Me; **nonaq. electrolytic** solution for electrochem. cells)  
 IT Secondary batteries  
 (lithium; **nonaq. electrolytic** solution for electrochem. cells)

IT Battery electrolytes  
(nonaq. electrolytic solution for electrochem. cells)

IT Amine oxides  
RL: MOA (Modifier or additive use); USES (Uses)  
(nonaq. electrolytic solution for electrochem. cells)

IT 2571-88-2, N,N-Dimethyl-1-octadecanamine oxide 3332-27-2,  
N,N-Dimethyl-1-tetradecanamine oxide 7128-91-8,  
N,N-Dimethyl-1-hexadecanamine oxide 7529-21-7, Tributylamine oxide  
13103-04-3, Trioctyl amine oxide 20587-64-8, Tridodecyl amine  
oxide 87286-76-8, Didodecyl methyl amine oxide 100545-50-4,  
Didecyl methyl amine oxide 101912-67-8, Dioctyl methyl amine oxide  
189290-24-2 213771-06-3 916203-46-8 916203-47-9 916203-48-0  
916203-49-1 916203-50-4  
RL: MOA (Modifier or additive use); USES (Uses)  
(nonaq. electrolytic solution for electrochem. cells)

IT 57-57-8,  $\beta$ -Propiolactone 68-12-2, Dmf, uses 75-05-8,  
Acetonitrile, uses 78-40-0, Triethyl phosphate 79-20-9,  
Methyl acetate 96-47-9, 2-Methyltetrahydrofuran 96-48-0,  
 $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3  
, Ethyl propionate 105-54-4, Ethyl butyrate 105-58-8,  
Diethyl carbonate 105-66-8, Propyl butyrate  
106-36-5, Propyl propionate 107-31-3, Methyl formate  
108-29-2, 4-Methyl- $\gamma$ -Butyrolactone 108-32-7, Propylene  
carbonate 109-21-7, Butyl butyrate 109-60-4,  
Propyl acetate 109-94-4, Ethyl formate 109-99-9, Thf, uses  
110-71-4, 1,2-Dimethoxyethane 110-74-7, Propyl formate 112-48-1,  
1,2-Dibutoxyethane 115-86-6, Triphenyl phosphate 115-96-8,  
Tris(2-chloroethyl)phosphate 123-86-4, Butyl acetate  
123-91-1, 1,4-Dioxane, uses 126-73-8, Tributylphosphate, uses  
141-78-6, Ethyl acetate, uses 358-63-4,  
Tris(2,2,2-trifluoroethyl)phosphate 512-56-1, Trimethyl phosphate  
513-02-0, Triisopropyl phosphate 513-08-6, Tripropyl phosphate  
542-28-9,  $\delta$ -Valerolactone 542-52-9, Dibutyl carbonate  
554-12-1, Methyl propionate 590-01-2, Butyl  
propionate 592-84-7, Butyl formate 616-38-6, Dimethyl carbonate  
623-42-7, Methyl butyrate 623-53-0, Ethyl methyl carbonate  
623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane  
646-06-0, 1,3-Dioxolane 1330-78-5, Tritolyl phosphate  
1679-47-6, 2-Methyl- $\gamma$ -Butyrolactone 1679-49-8,  
3-Methyl- $\gamma$ -Butyrolactone 2528-39-4, Trihexyl phosphate  
4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses  
7440-44-0, Carbon, uses 7791-03-9, Lithium perchlorate  
12022-46-7, Iron lithium oxide (FeLiO<sub>2</sub>) 12031-65-1, Lithium nickel  
oxide (LiNiO<sub>2</sub>) 12031-95-7, Lithium titanium oxide (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>)



12042-37-4, Alli 12057-17-9, Lithium manganese oxide ( $\text{LiMn}_2\text{O}_4$ )  
 12057-22-6, Lzn 12057-30-6 12162-79-7, Lithium manganese oxide  
 $\text{limno}_2$  12190-79-3, Cobalt lithium oxide ( $\text{CoLiO}_2$ ) 12332-29-5,  
 Iron lithium nitride ( $\text{FeLi}_3\text{N}_2$ ) 12338-02-2 13843-81-7, Dilithium  
 dichromate 14024-11-4, Lithium tetrachloroaluminate  
**14283-07-9**, Lithium tetrafluoroborate 14307-35-8, Lithium  
 chromate 15365-14-7, Iron lithium phosphate  $\text{felipo}_4$  18424-17-4,  
 Lithium hexafluoroantimonate **21324-40-3**, Lithium  
 hexafluorophosphate 25743-90-2 **33454-82-9**, Lithium  
 triflate 35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl  
 propyl carbonate 61234-06-8, Lithium 80, silicon 20 atomic  
 62852-65-7, Dilithium decachlorodecaborate(2\_) 82906-17-0  
 97037-11-1 97037-12-2 128975-24-6, Lithium manganese nickel  
 oxide  $\text{limn}_{0.5}\text{ni}_{0.5}\text{o}_2$  135573-53-4, Cobalt lithium nickel oxide  
 $\text{co}_{0.1}\text{lini}_{0.1}\text{o}_2$  174421-80-8, Cobalt lithium nitride ( $\text{Co}_{0.4}\text{Li}_{2.6}\text{N}$ )  
 177997-11-4, Cobalt gallium lithium nickel oxide 177997-12-5,  
 Boron cobalt lithium nickel oxide 177997-13-6, Aluminum cobalt  
 lithium nickel oxide 180997-14-2, Cobalt lithium magnesium nickel  
 oxide 184912-51-4, Copper lithium nitride ( $\text{Cu}_{0.4}\text{Li}_{2.6}\text{N}$ )  
 244304-18-5, Cobalt lithium nickel silicon oxide 244304-20-9,  
 Cobalt lithium nickel titanium oxide 244761-29-3, Lithium  
 bisoxalatoborate 291298-96-9 321201-33-6, Lithium  
 tris(oxalato)phosphate(1-) 346417-97-8, Cobalt lithium manganese  
 nickel oxide ( $\text{Co}_{0.33}\text{LiMn}_{0.33}\text{Ni}_{0.33}\text{O}_2$ ) 383187-24-4 427879-42-3  
 476300-71-7, Lithium carbide ( $\text{LiC}_6$ ) 913080-19-0 913080-20-3  
 916203-51-5

RL: TEM (Technical or engineered material use); USES (Uses)  
 (nonaq. electrolytic solution for electrochem.  
 cells)

L52 ANSWER 2 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2006:1256638 Document No. 146:10718 Triazine compounds for removing  
 acids and water from **nonaqueous electrolytes** for  
 electrochemical cells. Deng, Zhongyi; Decker, Jerry L.; Xu, Wu;  
 Sans, John R.; Bolomey, Pascal (Ferro Corporation, USA). U.S. Pat.  
 Appl. Publ. US 2006269844 A1 20061130, 6pp. (English). CODEN:  
 USXXCO. APPLICATION: US 2005-138907 20050526.

AB A process is provided to produce **non-aqueous**  
**electrolytic** solution for use in batteries having low acid  
 content and low water content. The invention involves removing  
 acids and water from **non-aqueous**  
**electrolytic** solns. typically found in **lithium** or  
**lithium-ion** batteries by using nitrogen-containing  
 compds. such as triazines. After treatment by a triazine such as  
 melamine, the concns. of acids and water in the **electrolytic**  
 solns. are substantially decreased. The present invention provides  
 a process to prepare extremely pure **electrolytic** solns.

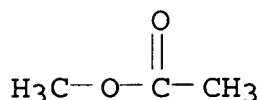
having low (<20 ppm) concns. of both water and acids.

IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 105-54-4, Ethyl butyrate 105-66-8, Propyl butyrate 106-36-5, Propyl propionate, uses 109-21-7, Butyl butyrate 109-60-4, Propyl acetate 123-86-4, Butyl acetate 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 590-01-2, Butyl propionate 623-42-7, Methyl butyrate 646-06-0, Dioxolane 7439-93-2, Lithium, uses 7439-93-2D, Lithium, salt 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate

RL: TEM (Technical or engineered material use); USES (Uses) (triazine compds. for removing acids and water from **nonaq** . **electrolytes** for electrochem. cells)

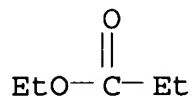
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



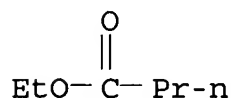
RN 105-37-3 HCAPLUS

CN Propanoic acid, ethyl ester (CA INDEX NAME)



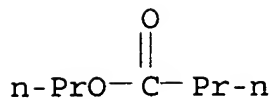
RN 105-54-4 HCAPLUS

CN Butanoic acid, ethyl ester (CA INDEX NAME)

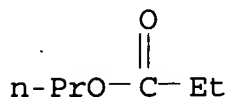


RN 105-66-8 HCAPLUS

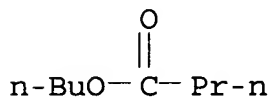
CN Butanoic acid, propyl ester, diethyl ester (CA INDEX NAME)



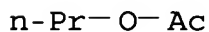
RN 106-36-5 HCAPLUS  
CN Propanoic acid, propyl ester (CA INDEX NAME)



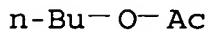
RN 109-21-7 HCAPLUS  
CN Butanoic acid, butyl ester (CA INDEX NAME)



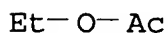
RN 109-60-4 HCAPLUS  
CN Acetic acid, propyl ester (CA INDEX NAME)



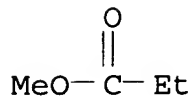
RN 123-86-4 HCAPLUS  
CN Acetic acid, butyl ester (8CI, 9CI) (CA INDEX NAME)



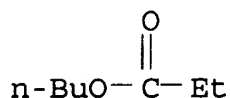
RN 141-78-6 HCAPLUS  
CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)



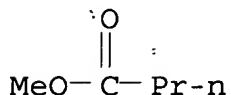
RN 554-12-1 HCAPLUS  
CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)



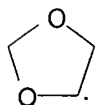
RN 590-01-2 HCAPLUS  
CN Propanoic acid, butyl ester (9CI) (CA INDEX NAME)



RN 623-42-7 HCAPLUS  
CN Butanoic acid, methyl ester (9CI) (CA INDEX NAME)



RN 646-06-0 HCAPLUS  
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



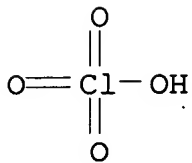
RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

Li

RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

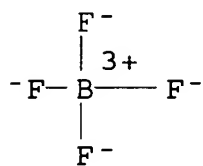
Li

RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



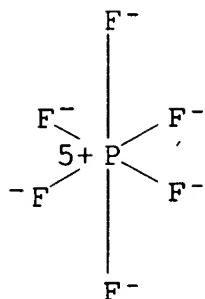
● Li

RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



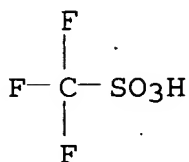
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

INCL 429325000; 429326000; 029623300; 029623200; 029623500  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 27  
 ST battery **nonaq electrolyte** acid water removal  
 triazine compd; electrochem cell **nonaq electrolyte**  
 acid water removal triazine compd  
 IT Battery **electrolytes**  
 Secondary batteries  
 (triazine compds. for removing acids and water from **nonaq**  
 . **electrolytes** for electrochem. cells)  
 IT Acids, processes  
 RL: REM (Removal or disposal); PROC (Process)  
 (triazine compds. for removing acids and water from **nonaq**  
 . **electrolytes** for electrochem. cells)  
 IT 108-78-1, Melamine, uses 290-87-9D, s-Triazine, compds.

877-89-4, 2,4,6-Trimethoxy-1,3,5-triazine 884-43-5 1440-03-5  
 1668-53-7 1919-48-8, 2,4,6-Triphenoxy-1,3,5-triazine 2125-28-2  
 2725-22-6 19837-00-4 25023-99-8 29263-10-3 122864-77-1  
 122864-78-2 122864-79-3 122897-08-9

RL: MOA (Modifier or additive use); USES (Uses)

(triazine compds. for removing acids and water from **nonaq**  
 . **electrolytes** for electrochem. cells)

IT 7664-39-3, Hydrofluoric acid, processes 7732-18-5, Water,  
 processes

RL: REM (Removal or disposal); PROC (Process)

(triazine compds. for removing acids and water from **nonaq**  
 . **electrolytes** for electrochem. cells)

IT 57-57-8, Propiolactone 68-12-2, Dmf, uses 78-40-0, Triethyl  
 phosphate 79-20-9, Methyl acetate 96-47-9,  
 2-Methyltetrahydrofuran 96-48-0,  $\gamma$ -Butyrolactone 96-49-1,  
 Ethylene carbonate 105-37-3, Ethyl propionate  
 105-54-4, Ethyl butyrate 105-58-8, Diethyl carbonate  
 105-66-8, Propyl butyrate 106-36-5, Propyl  
 propionate, uses 107-31-3, Methyl formate 108-29-2,  
 4-Methyl- $\gamma$ -Butyrolactone 108-32-7, Propylene carbonate  
 109-21-7, Butyl butyrate 109-60-4, Propyl acetate  
 109-94-4, Ethyl formate 109-99-9, Thf, uses 110-71-4,  
 1,2-Dimethoxyethane 110-74-7, Propyl formate 112-48-1,  
 1,2-Dibutoxyethane 115-86-6, Triphenyl phosphate 115-96-8,  
 Tris(chloroethyl) phosphate 123-86-4, Butyl acetate  
 123-91-1, p-Dioxane, uses 126-73-8, Tributyl phosphate, uses  
 141-78-6, Ethyl acetate, uses 358-63-4,  
 Tris(2,2,2-trifluoroethyl) phosphate 512-56-1, Trimethyl phosphate  
 513-02-0, Triisopropyl phosphate 513-08-6, Tripropyl phosphate  
 542-28-9,  $\delta$ -Valerolactone 542-52-9, Dibutyl carbonate  
 554-12-1, Methyl propionate 590-01-2, Butyl  
 propionate 592-84-7, Butyl formate 616-38-6, Dimethyl carbonate  
 623-42-7, Methyl butyrate 623-53-0, Ethyl methyl carbonate  
 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane  
 646-06-0, Dioxolane 1330-78-5, Tritolyl phosphate  
 1679-47-6, 2-Methyl- $\gamma$ -Butyrolactone 1679-49-8,  
 3-Methyl- $\gamma$ -Butyrolactone 2528-39-4, Trihexyl phosphate  
 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses  
 7439-93-2D, **Lithium, salt** 7440-44-0,  
 Carbon, uses 7791-03-9, Lithium perchlorate 12022-46-7,  
 Iron lithium oxide (LiFeO<sub>2</sub>) 12031-65-1, Lithium nickel oxide  
 (LiNiO<sub>2</sub>) 12031-95-7, Lithium titanium oxide (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>)  
 12042-37-4, Alli 12057-17-9 12057-22-6, Lzn 12057-30-6,  
 Lithium antimonide (Li<sub>3</sub>Sb) 12162-79-7, Lithium manganese oxide  
 limno<sub>2</sub> 12190-79-3, Cobalt lithium oxide (LiCoO<sub>2</sub>) 12332-29-5,  
 Iron lithium nitride (FeLi<sub>3</sub>N<sub>2</sub>) 12338-02-2 13843-81-7, DiLithium  
 dichromate 14024-11-4, Lithium tetrachloroaluminate

14283-07-9, Lithium tetrafluoroborate 14307-35-8, Lithium chromate 15365-14-7, Iron lithium phosphate felipo4 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 25743-90-2 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl propyl carbonate 61234-06-8, Lithium 80, silicon 20 atomic 62852-65-7, DiLithium decachlorodecaborate(2-) 82906-17-0 97037-11-1 97037-12-2 128975-24-6, LiLithium manganese nickel oxide LiMn0.5Ni0.5O2 135573-53-4, Cobalt lithium nickel oxide co0-11ini0-1o2 174421-80-8, Cobalt lithium nitride (Co0.4Li2.6N) 177997-11-4, Cobalt gallium lithium nickel oxide 177997-12-5, Boron cobalt lithium nickel oxide 177997-13-6, Aluminum cobalt lithium nickel oxide 180997-14-2, Cobalt lithium magnesium nickel oxide 184912-51-4, Copper lithium nitride (Cu0.4Li2.6N) 244304-18-5, Cobalt lithium nickel silicon oxide 244304-20-9, Cobalt lithium nickel titanium oxide 244761-29-3, Lithium bisoxalatoborate 291298-96-9 321201-33-6, Lithium tris(oxalato)phosphate 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2) 383187-24-4 427879-42-3, Lithium bis(difluoromalonato)borate 471294-34-5 476300-71-7, Lithium carbide (LiC6) 913080-19-0, Lithium (difluoromalonato)(oxalato)borate 913080-20-3, Lithium tris(difluoromalonato)phosphate

RL: TEM (Technical or engineered material use); USES (Uses)  
 (triazine compds. for removing acids and water from **nonaq**  
 . **electrolytes** for electrochem. cells)

L52 ANSWER 3 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2006:1256604 Document No. 146:30076 **Nonaqueous**

**electrolytic** solution for electrochemicals cells. Xu, Wu; Deng, Zhongyi; Bolomey, Pascal (Ferro Corporation, USA). U.S. Pat. Appl. Publ. US 2006269846 A1 20061130, 10pp. (English). CODEN: USXXCO. APPLICATION: US 2005-138905 20050526.

AB The invention relates to the use of a nitrogen silylated compound as additive in a **nonaq. electrolytic** solution The **electrolytic** solution is suitable for use in electrochem. cells such as **lithium** and **lithium ion** batteries. Batteries using this **electrolytic** solution have long cycle life and high capacity retention.

IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 105-54-4, Ethyl butyrate 105-66-8, Propyl butyrate 106-36-5, Propyl propionate 109-21-7, Butyl butyrate 109-60-4, Propyl acetate 123-86-4, Butyl acetate 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 590-01-2, Butyl propionate 623-42-7, Methyl butyrate 646-06-0,

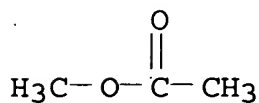


1,3-Dioxolane 7439-93-2, Lithium, uses 7791-03-9  
, Lithium perchlorate 14283-07-9, Lithium  
tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate  
33454-82-9, Lithium triflate

RL: TEM (Technical or engineered material use); USES (Uses)  
(nonaq. electrolytic solution for electrochems.  
cells)

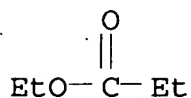
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



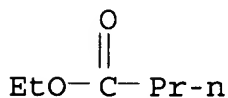
RN 105-37-3 HCAPLUS

CN Propanoic acid, ethyl ester (CA INDEX NAME)



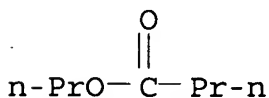
RN 105-54-4 HCAPLUS

CN Butanoic acid, ethyl ester (CA INDEX NAME)



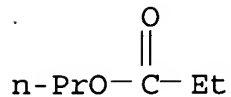
RN 105-66-8 HCAPLUS

CN Butanoic acid, propyl ester, diethyl ester (CA INDEX NAME)

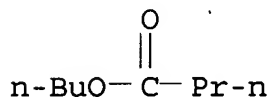


RN 106-36-5 HCAPLUS

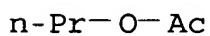
CN Propanoic acid, propyl ester (CA INDEX NAME)



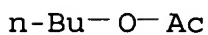
RN 109-21-7 HCAPLUS  
CN Butanoic acid, butyl ester (CA INDEX NAME)



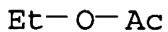
RN 109-60-4 HCAPLUS  
CN Acetic acid, propyl ester (CA INDEX NAME)



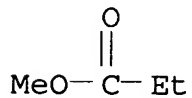
RN 123-86-4 HCAPLUS  
CN Acetic acid, butyl ester (8CI, 9CI) (CA INDEX NAME)



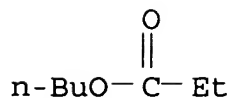
RN 141-78-6 HCAPLUS  
CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)



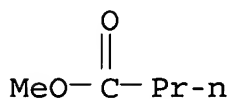
RN 554-12-1 HCAPLUS  
CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)



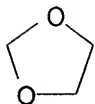
RN 590-01-2 HCAPLUS  
CN Propanoic acid, butyl ester (9CI) (CA INDEX NAME)



RN 623-42-7 HCAPLUS  
CN Butanoic acid, methyl ester (9CI) (CA INDEX NAME)



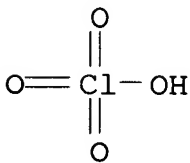
RN 646-06-0 HCAPLUS  
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

Li

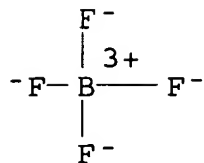
RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 14283-07-9 HCAPLUS

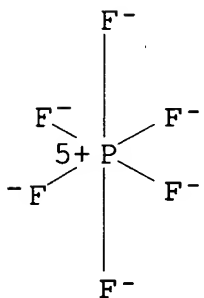
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

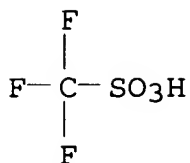
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

INCL 429326000; 429339000; 429336000; 429337000; 429328000; 429329000;  
029623200; 029623300; 029623500

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery **nonaq electrolyte**

IT Secondary batteries  
(lithium; **nonaq. electrolytic** solution for  
electrochems. cells)

IT Battery **electrolytes**  
(**nonaq. electrolytic** solution for electrochems.  
cells)

IT 3553-93-3 3768-56-7 7449-74-3 7585-48-0 10416-59-8  
13368-42-8, 4-Trimethylsilyl morpholine 13435-12-6 14468-90-7,  
1-Trimethylsilyl-2-pyrrolidinone 15097-49-1 18156-74-6  
18293-54-4, 1-Trimethylsilyl-1,2,4-triazole 18297-63-7  
24589-78-4 25561-30-2 43112-38-5, 3-Trimethylsilyl-2-  
oxazolidinone 43183-36-4 54925-64-3 185453-90-1 768390-65-4  
768390-68-7 768390-69-8

RL: MOA (Modifier or additive use); USES (Uses)  
(**nonaq. electrolytic** solution for electrochems.  
cells)

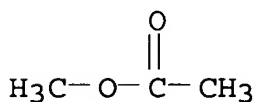
IT 57-57-8,  $\beta$ -Propiolactone 68-12-2, Dmf, uses 75-05-8,  
Acetonitrile, uses 78-40-0, Triethyl phosphate 79-20-9,  
Methyl acetate 96-47-9, 2-Methyltetrahydrofuran 96-48-0,  
 $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3  
, Ethyl propionate 105-54-4, Ethyl butyrate 105-58-8,  
Diethyl carbonate 105-66-8, Propyl butyrate  
106-36-5, Propyl propionate 107-31-3, Methyl formate  
108-29-2, 4-Methyl- $\gamma$ -Butyrolactone 108-32-7, Propylene  
carbonate 109-21-7, Butyl butyrate 109-60-4,  
Propyl acetate 109-94-4, Ethyl formate 109-99-9, Thf, uses  
110-71-4, 1,2-Dimethoxyethane 110-74-7, Propyl formate 112-48-1,  
1,2-Dibutoxyethane 115-86-6, Triphenyl phosphate 115-96-8,  
Tris(2-chloroethyl)phosphate 123-86-4, Butyl acetate  
123-91-1, 1,4-Dioxane, uses 126-73-8, Tributyl phosphate, uses  
141-78-6, Ethyl acetate, uses 358-63-4,

Tris(2,2,2-trifluoroethyl)phosphate 512-56-1, Trimethyl phosphate  
 513-02-0, Triisopropyl phosphate 513-08-6, Tripropyl phosphate  
 542-28-9,  $\delta$ -Valerolactone 542-52-9, Dibutyl carbonate  
 554-12-1, Methyl propionate 590-01-2, Butyl  
 propionate 592-84-7, Butyl formate 616-38-6, Dimethyl carbonate  
 623-42-7, Methyl butyrate 623-53-0, Ethyl methyl carbonate  
 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane  
 646-06-0, 1,3-Dioxolane 1330-78-5, Tritolyl phosphate  
 1679-47-6, 2-Methyl-Butyrolactone 1679-49-8,  
 3-Methyl-Butyrolactone 2528-39-4, Trihexyl phosphate  
 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses  
 7440-44-0, Carbon, uses 7791-03-9, Lithium perchlorate  
 12022-46-7, Iron lithium oxide ( $\text{FeLiO}_2$ ) 12031-65-1, Lithium nickel  
 oxide ( $\text{LiNiO}_2$ ) 12031-95-7, Lithium titanium oxide ( $\text{Li}_4\text{Ti}_5\text{O}_{12}$ )  
 12042-37-4, Alli 12057-17-9, Lithium manganese oxide ( $\text{LiMn}_2\text{O}_4$ )  
 12057-22-6, Lzn 12057-30-6 12162-79-7, Lithium manganese oxide  
 limno<sub>2</sub> 12190-79-3, Cobalt lithium oxide ( $\text{CoLiO}_2$ ) 12332-29-5,  
 Iron lithium nitride ( $\text{FeLi}_3\text{N}_2$ ) 12338-02-2 13843-81-7, Dilithium  
 dichromate 14024-11-4, Lithium tetrachloroaluminate  
 14283-07-9, Lithium tetrafluoroborate 14307-35-8, Lithium  
 chromate 15365-14-7, Iron lithium phosphate  $\text{FeLiPO}_4$  18424-17-4,  
 Lithium hexafluoroantimonate 21324-40-3, Lithium  
 hexafluorophosphate 25743-90-2 29935-35-1, Lithium  
 hexafluoroarsenate 33454-82-9, Lithium triflate  
 35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl propyl  
 carbonate 61234-06-8, Lithium 80, silicon 20 atomic 62852-65-7,  
 Dilithium decachlorodecaborate(2-) 82906-17-0 97037-11-1  
 97037-12-2 128975-24-6, Lithium manganese nickel oxide  
 limn<sub>0.5</sub>ni<sub>0.5</sub>o<sub>2</sub> 135573-53-4, Cobalt lithium nickel oxide  
 Co<sub>0.1</sub>LiNi<sub>0.1</sub>O<sub>2</sub> 174421-80-8, Cobalt lithium nitride ( $\text{Co}_0.4\text{Li}_{2.6}\text{N}$ )  
 177997-11-4, Cobalt gallium lithium nickel oxide 177997-12-5,  
 Boron cobalt lithium nickel oxide 177997-13-6, Aluminum cobalt  
 lithium nickel oxide 180997-14-2, Cobalt lithium magnesium nickel  
 oxide 184912-51-4, Copper lithium nitride ( $\text{Cu}_0.4\text{Li}_{2.6}\text{N}$ )  
 244304-18-5, Cobalt lithium nickel silicon oxide 244304-20-9,  
 Cobalt lithium nickel titanium oxide 244761-29-3, Lithium  
 bisoxalatoborate 291298-96-9 321201-33-6, Lithium  
 tris(oxalato)phosphate(1-) 346417-97-8, Cobalt lithium manganese  
 nickel oxide ( $\text{Co}_0.33\text{LiMn}_0.33\text{Ni}_0.33\text{O}_2$ ) 383187-24-4 427879-42-3  
 471294-34-5 476300-71-7, Lithium carbide ( $\text{LiC}_6$ ) 913080-19-0  
 913080-20-3

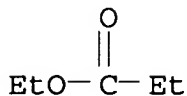
RL: TEM (Technical or engineered material use); USES (Uses)  
 (nonaq. electrolytic solution for electrochems.  
 cells)

**electrolytic** solution for lithium secondary battery. Xu, Wu; Deng, Zhongyi; Bolomey, Pascal (Ferro Corporation, USA). U.S. Pat. Appl. Publ. US 2006240327 A1 20061026, 6pp. (English). CODEN: USXXCO. APPLICATION: US 2005-113823 20050425.

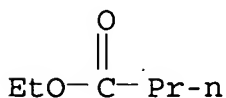
- AB The use of lithium bis(oxalate)borate ~~as an~~ additive in a lithium secondary battery provides improved battery performance such as long life and high capacity retention after high temperature storage.
- IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 105-54-4, Ethyl butyrate 105-66-8, Propyl butyrate 106-36-5, Propyl propionate, uses 109-21-7, Butyl butyrate 109-60-4, Propyl acetate 123-86-4, Butyl acetate 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 590-01-2, Butyl propionate 623-42-7, Methyl butyrate 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate
- RL: DEV (Device component use); USES (Uses)  
(**nonaq. electrolytic** solution for lithium secondary battery)
- RN 79-20-9 HCAPLUS
- CN Acetic acid, methyl ester (CA INDEX NAME)



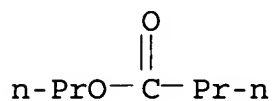
- RN 105-37-3 HCAPLUS
- CN Propanoic acid, ethyl ester (CA INDEX NAME)



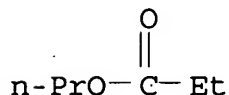
- RN 105-54-4 HCAPLUS
- CN Butanoic acid, ethyl ester (CA INDEX NAME)



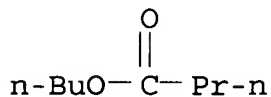
RN 105-66-8 HCAPLUS  
CN Butanoic acid, propyl ester, diethyl ester (CA INDEX NAME)



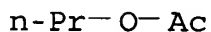
RN 106-36-5 HCAPLUS  
CN Propanoic acid, propyl ester (CA INDEX NAME)



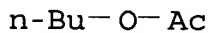
RN 109-21-7 HCAPLUS  
CN Butanoic acid, butyl ester (CA INDEX NAME)



RN 109-60-4 HCAPLUS  
CN Acetic acid, propyl ester (CA INDEX NAME)

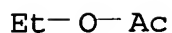


RN 123-86-4 HCAPLUS  
CN Acetic acid, butyl ester (8CI, 9CI) (CA INDEX NAME)

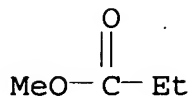


RN 141-78-6 HCAPLUS  
CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)

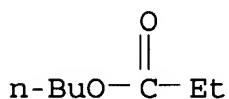




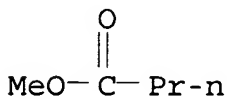
RN 554-12-1 HCAPLUS  
CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)



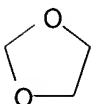
RN 590-01-2 HCAPLUS  
CN Propanoic acid, butyl ester (9CI) (CA INDEX NAME)



RN 623-42-7 HCAPLUS  
CN Butanoic acid, methyl ester (9CI) (CA INDEX NAME)



RN 646-06-0 HCAPLUS  
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)

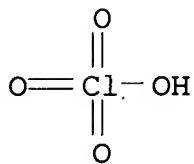


RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS

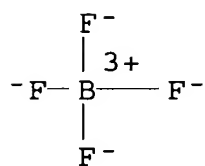
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

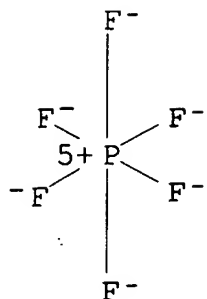
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

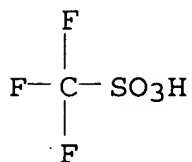
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

INCL 429324000; 429338000; 429342000; 429343000; 429339000; 429326000;  
 429330000; 429331000; 429332000; 429217000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium secondary battery **nonaq electrolyte**  
 IT Secondary batteries  
     (lithium; **nonaq. electrolytic** solution for  
     lithium secondary battery)  
 IT Battery **electrolytes**  
     (**nonaq. electrolytic** solution for lithium  
     secondary battery)  
 IT Alkali metal salts  
     Alkaline earth salts  
     Fluoropolymers, uses  
     Onium compounds  
     Polyamides, uses

Styrene-butadiene rubber, uses

Transition metal salts

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolytic** solution for lithium  
secondary battery)

IT 57-57-8,  $\beta$ -Propiolactone 68-12-2, Dmf, uses 75-05-8,  
Acetonitrile, uses 78-40-0, Triethyl phosphate 79-20-9,  
Methyl acetate 96-47-9, 2-Methyl tetrahydrofuran 96-48-0,  
 $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3  
, Ethyl propionate 105-54-4, Ethyl butyrate 105-58-8,  
Diethyl carbonate 105-66-8, Propyl butyrate  
106-36-5, Propyl propionate, uses 107-31-3, Methyl formate  
108-29-2, 4-Methyl- $\gamma$ -Butyrolactone 108-32-7, Propylene  
carbonate 109-21-7, Butyl butyrate 109-60-4,  
Propyl acetate 109-94-4, Ethyl formate 109-99-9, Thf, uses  
110-71-4, 1,2-Dimethoxyethane 110-74-7, Propyl formate 112-48-1,  
1,2-Dibutoxyethane 115-86-6, Triphenyl phosphate 115-96-8,  
Tris(2-chloroethyl)phosphate 123-86-4, Butyl acetate  
123-91-1, 1,4-Dioxane, uses 126-73-8, Tributyl phosphate, uses  
141-78-6, Ethyl acetate, uses 358-63-4,  
Tris(2,2,2-trifluoroethyl)phosphate 512-56-1, Trimethyl phosphate  
513-02-0, Triisopropyl phosphate 513-08-6, Tripropyl phosphate  
542-28-9,  $\delta$ -Valerolactone 542-52-9, Dibutyl carbonate  
554-12-1, Methyl propionate 590-01-2, Butyl  
propionate 592-84-7, Butyl formate 616-38-6, Dimethyl carbonate  
623-42-7, Methyl butyrate 623-53-0, Ethyl methyl carbonate  
623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane  
646-06-0, 1,3-Dioxolane 1330-78-5, Tritolyl phosphate  
1679-47-6, 2-Methyl- $\gamma$ -Butyrolactone 1679-49-8,  
3-Methyl- $\gamma$ -Butyrolactone 2528-39-4, Trihexyl phosphate  
4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses  
7440-44-0, Carbon, uses 7791-03-9, Lithium perchlorate  
12022-46-7, Iron lithium oxide (FeLiO<sub>2</sub>) 12031-65-1, Lithium nickel  
oxide (LiNiO<sub>2</sub>) 12031-95-7, Lithium titanium oxide (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>)  
12042-37-4, Alli 12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>)  
12057-22-6, Lzn 12162-79-7, Lithium manganese oxide limno<sub>2</sub>  
12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 12332-29-5, Iron lithium  
nitride (FeLi<sub>3</sub>N<sub>2</sub>) 13843-81-7, Lithium dichromate li<sub>2</sub>cr<sub>2</sub>o<sub>7</sub>  
14024-11-4, Lithium tetrachloroaluminate 14283-07-9,  
Lithium tetrafluoroborate 14307-35-8, Lithium chromate  
15365-14-7, Iron lithium phosphate felipo<sub>4</sub> 21324-40-3,  
Lithium hexafluorophosphate 25743-90-2 29935-35-1, Lithium  
hexafluoroarsenate 33454-82-9, Lithium triflate  
35363-40-7, Ethyl propyl carbonate, uses 56525-42-9, Methyl propyl  
carbonate, uses 61234-06-8, Lithium 80, silicon 20 atomic  
62852-65-7, Dilithium decachlorodecaborate(2-) 97037-04-2  
97037-11-1 97037-12-2 128975-24-6, Lithium manganese nickel

oxide  $\text{LiMn}_0.5\text{Ni}_0.5\text{O}_2$  131344-56-4, Cobalt lithium nickel oxide  
 159035-51-5 174421-80-8, Cobalt lithium nitride ( $\text{Co}_0.4\text{Li}_2.6\text{N}$ )  
 184912-51-4, Copper lithium nitride ( $\text{Cu}_0.4\text{Li}_2.6\text{N}$ ) 346417-97-8,  
 Cobalt lithium manganese nickel oxide ( $\text{Co}_0.33\text{LiMn}_0.33\text{Ni}_0.33\text{O}_2$ )  
 405159-62-8 476300-71-7, Lithium carbide ( $\text{LiC}_6$ )

RL: DEV (Device component use); USES (Uses)

(**nonaq. electrolytic** solution for lithium  
 secondary battery)

IT 108-78-1, Melamine, uses 1301-96-8, Silver oxide ( $\text{AgO}$ )  
 1307-96-6, Cobalt oxide ( $\text{CoO}$ ), uses 1309-60-0, Lead oxide ( $\text{PbO}_2$ )  
 1309-64-4, Antimony oxide ( $\text{Sb}_2\text{O}_3$ ), uses 1310-53-8, Germanium oxide  
 ( $\text{GeO}_2$ ), uses 1312-43-2, Indium oxide ( $\text{In}_2\text{O}_3$ ) 1313-99-1, Nickel  
 oxide ( $\text{NiO}$ ), uses 1314-13-2, Zinc oxide ( $\text{ZnO}$ ), uses 1314-27-8,  
 Lead oxide ( $\text{Pb}_2\text{O}_3$ ) 1314-41-6, Lead oxide ( $\text{Pb}_3\text{O}_4$ ) 1317-36-8, Lead  
 oxide ( $\text{PbO}$ ), uses 1345-25-1, Iron oxide ( $\text{FeO}$ ), uses 12002-97-0,  
 Silver oxide ( $\text{Ag}_2\text{O}_3$ ) 12030-22-7, Indium oxide ( $\text{In}_2\text{O}$ ) 18282-10-5,  
 Tin oxide ( $\text{SnO}_2$ ) 20619-16-3, Germanium oxide ( $\text{GeO}$ ) 20667-12-3,  
 Silver oxide ( $\text{Ag}_2\text{O}$ ) 21651-19-4, Tin oxide ( $\text{SnO}$ ) 24937-79-9, PvdF  
 113443-18-8, Silicon oxide  $\text{SiO}_2$  244761-29-3, Lithium  
 bisoxalatoborate 291298-96-9 321201-33-6 383187-24-4  
 427879-42-3 913080-19-0 913080-20-3

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolytic** solution for lithium  
 secondary battery)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)

(styrene-butadiene rubber; **nonaq. electrolytic**  
 solution for lithium secondary battery)

L52 ANSWER 5 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2006:1124255 Document No. 145:457700 **Nonaqueous**  
**electrolytic** solution with mixed salts. Xu, Wu; Deng,  
 Zhongyi; Bolomey, Pascal; Payne, Martin W. (Ferro Corporation, USA).  
 U.S. Pat. Appl. Publ. US 2006240322 A1 20061026, 6pp. (English).  
 CODEN: USXXCO. APPLICATION: US 2005-113966 20050425.

AB The use of at least two **electrolyte salts** in a  
**lithium** secondary battery provides improved battery  
 performance such as long cycle life of high discharge capacity and  
 high capacity retention.

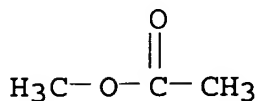
IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate  
 105-54-4, Ethyl butyrate 105-66-8, Propyl butyrate  
 106-36-5, Propyl propionate, uses 109-21-7, Butyl  
 butyrate 109-60-4, Propyl acetate 123-86-4,  
 Butyl acetate 141-78-6, Ethyl acetate, uses  
 554-12-1, Methyl propionate 590-01-2, Butyl  
 propionate 623-42-7, Methyl butyrate 646-06-0,  
 1,3-Dioxolane 7439-93-2, Lithium, uses 7791-03-9

, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolytic solution with mixed salts)

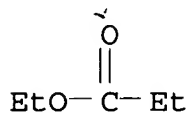
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



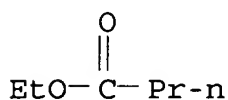
RN 105-37-3 HCAPLUS

CN Propanoic acid, ethyl ester (CA INDEX NAME)



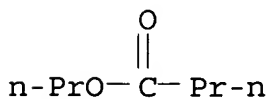
RN 105-54-4 HCAPLUS

CN Butanoic acid, ethyl ester (CA INDEX NAME)



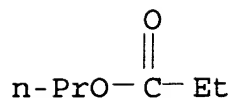
RN 105-66-8 HCAPLUS

CN Butanoic acid, propyl ester, diethyl ester (CA INDEX NAME)

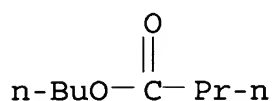


RN 106-36-5 HCAPLUS

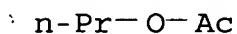
CN Propanoic acid, propyl ester (CA INDEX NAME)



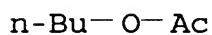
RN 109-21-7 HCAPLUS  
CN Butanoic acid, butyl ester (CA INDEX NAME)



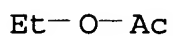
RN 109-60-4 HCAPLUS  
CN Acetic acid, propyl ester (CA INDEX NAME)



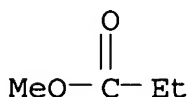
RN 123-86-4 HCAPLUS  
CN Acetic acid, butyl ester (8CI, 9CI) (CA INDEX NAME)



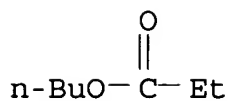
RN 141-78-6 HCAPLUS  
CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)



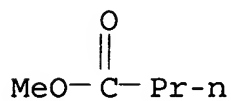
RN 554-12-1 HCAPLUS  
CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)



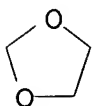
RN 590-01-2 HCAPLUS  
CN Propanoic acid, butyl ester (9CI) (CA INDEX NAME)



RN 623-42-7 HCAPLUS  
CN Butanoic acid, methyl ester (9CI) (CA INDEX NAME)



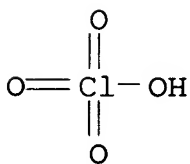
RN 646-06-0 HCAPLUS  
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

Li

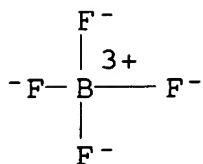
RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

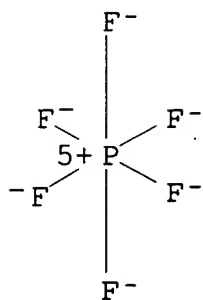


RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



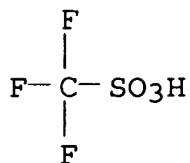
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

INCL 429188000; 429338000; 429342000; 429343000; 429337000; 429329000;  
429330000; 429331000; 429332000; 429231100

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery **electrolyte** mixed salt soln **nonaq**

IT Battery **electrolytes**  
Secondary batteries  
(**nonaq. electrolytic** solution with mixed salts)

IT Fluoropolymers, uses  
Polyamides, uses  
Styrene-butadiene rubber, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(**nonaq. electrolytic** solution with mixed salts)

IT 57-57-8,  $\beta$ -Propiolactone 68-12-2, Dmf, uses 75-05-8,  
Acetonitrile, uses 78-40-0, Triethyl phosphate 79-20-9,  
Methyl acetate 96-47-9, 2-Methyltetrahydrofuran 96-48-0,  
 $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3  
, Ethyl propionate 105-54-4, Ethyl butyrate 105-58-8,  
Diethyl carbonate 105-66-8, Propyl butyrate  
106-36-5, Propyl propionate, uses 107-31-3, Methyl formate  
108-29-2, 4-Methyl- $\gamma$ -Butyrolactone 108-32-7, Propylene  
carbonate 109-21-7, Butyl butyrate 109-60-4,  
Propyl acetate 109-94-4, Ethyl formate 109-99-9, Thf, uses  
110-71-4, 1,2-Dimethoxyethane 110-74-7, Propyl formate 112-48-1,  
1,2-Dibutoxyethane 115-86-6, Triphenyl phosphate 115-96-8,  
Tris(2-chloroethyl)phosphate 123-86-4, Butyl acetate  
123-91-1, 1,4-Dioxane, uses 126-73-8, Tributyl phosphate, uses  
141-78-6, Ethyl acetate, uses 358-63-4,  
Tris(2,2,2-trifluoroethyl)phosphate 512-56-1, Trimethyl phosphate  
513-02-0, Triisopropyl phosphate 513-08-6, Tripropyl phosphate  
542-28-9,  $\delta$ -Valerolactone 542-52-9, Dibutyl carbonate  
554-12-1, Methyl propionate 590-01-2, Butyl  
propionate 592-84-7, Butyl formate 616-38-6, Dimethyl carbonate  
623-42-7, MEthyl butyrate 623-53-0, Ethyl methyl carbonate  
623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane  
646-06-0, 1,3-Dioxolane 1330-78-5, Tritolyl phosphate

1679-47-6, 2-Methyl- $\gamma$ -Butyrolactone 1679-49-8,  
 3-Methyl- $\gamma$ -Butyrolactone 2528-39-4, Trihexyl phosphate  
 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses  
 7440-44-0, Carbon, uses 7791-03-9, Lithium perchlorate  
 12022-46-7, Iron lithium oxide (FeLiO<sub>2</sub>) 12031-65-1, Lithium nickel  
 oxide (LiNiO<sub>2</sub>) 12031-95-7, Lithium titanium oxide (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>)  
 12042-37-4, Alli 12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>)  
 12057-22-6, Lzn 12162-79-7, Lithium manganese oxide limno<sub>2</sub>  
 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 12332-29-5, Iron lithium  
 nitride (FeLi<sub>3</sub>N<sub>2</sub>) 12338-02-2 13843-81-7, Dilithium dichromate  
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9,  
 Lithium tetrafluoroborate 14307-35-8, Lithium chromate  
 15365-14-7, Iron lithium phosphate felipo<sub>4</sub> 21324-40-3,  
 Lithium hexafluorophosphate 25743-90-2 29935-35-1, Lithium  
 hexafluoroarsenate 33454-82-9, Lithium triflate  
 35363-40-7, Ethyl propyl carbonate, uses 56525-42-9, Methyl propyl  
 carbonate, uses 61234-06-8, Lithium<sub>80</sub>, silicon 20 atomic  
 62852-65-7, Lithium decachlorodecaborate(2-) 82906-17-0  
 97037-11-1 97037-12-2 128975-24-6, Lithium manganese nickel  
 oxide limn<sub>0.5</sub>ni<sub>0.5</sub>o<sub>2</sub> 131344-56-4, Cobalt lithium nickel oxide  
 174421-80-8, Cobalt lithium nitride (Co<sub>0.4</sub>Li<sub>2.6</sub>N) 184912-51-4,  
 Copper lithium nitride (Cu<sub>0.4</sub>Li<sub>2.6</sub>N) 244761-29-3, Lithium  
 bisoxalatoborate 291298-96-9 321201-33-6 346417-97-8, Cobalt  
 lithium manganese nickel oxide (Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>)  
 383187-24-4 427879-42-3 476300-71-7, Lithium carbide (LiC<sub>6</sub>)  
 913080-19-0 913080-20-3

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic solution with mixed salts)

IT 108-78-1, Melamine, uses 24937-79-9, PvdF

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolytic solution with mixed salts)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)

(styrene-butadiene rubber; nonaq. electrolytic  
 solution with mixed salts)

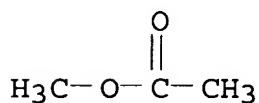
L52 ANSWER 6 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2006:1123177 Document No. 145:441420 **Nonaqueous**

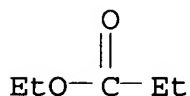
**electrolytic** solution for secondary battery. Xu, Wu; Deng,  
 Zhongyi; Zhang, Yali; Bolomey, Pascal (Ferro Corporation, USA).  
 U.S. Pat. Appl. Publ. US 2006236528 A1 20061026, 5pp., Cont.-in-part  
 of U.S. Ser. No. 113,966. (English). CODEN: USXXCO. APPLICATION:  
 US 2005-196782 20050803. PRIORITY: US 2005-111823 20050422; US  
 2005-113966 20050425.

AB The use of lithium bis(oxalato)borate as an additive in a lithium  
 secondary battery provides improved battery performance such as long  
 life, high capacity retention, and protection against overcharging.

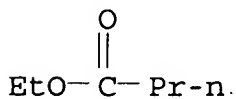
IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 105-54-4, Ethyl butyrate 105-66-8, Propyl butyrate 106-36-5, Propyl propionate, uses 109-21-7, Butyl butyrate 109-60-4, Propyl acetate 123-86-4, Butyl acetate 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 590-01-2, Butyl propionate 623-42-7, Methyl butyrate 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate  
RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolytic solution for secondary battery)  
RN 79-20-9 HCAPLUS  
CN Acetic acid, methyl ester (CA INDEX NAME)



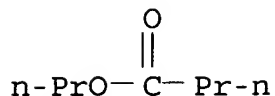
RN 105-37-3 HCAPLUS  
CN Propanoic acid, ethyl ester (CA INDEX NAME)



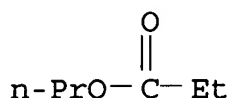
RN 105-54-4 HCAPLUS  
CN Butanoic acid, ethyl ester (CA INDEX NAME)



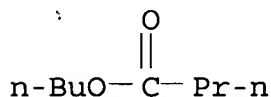
RN 105-66-8 HCAPLUS  
CN Butanoic acid, propyl ester, diethyl ester (CA INDEX NAME)



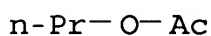
RN 106-36-5 HCAPLUS  
CN Propanoic acid, propyl ester (CA INDEX NAME)



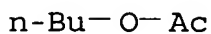
RN 109-21-7 HCAPLUS  
CN Butanoic acid, butyl ester (CA INDEX NAME)



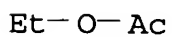
RN 109-60-4 HCAPLUS  
CN Acetic acid, propyl ester (CA INDEX NAME)



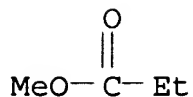
RN 123-86-4 HCAPLUS  
CN Acetic acid, butyl ester (8CI, 9CI) (CA INDEX NAME)



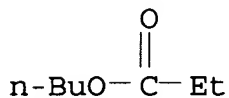
RN 141-78-6 HCAPLUS  
CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)



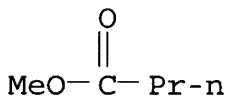
RN 554-12-1 HCAPLUS  
CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)



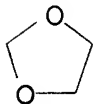
RN 590-01-2 HCAPLUS  
CN Propanoic acid, butyl ester (9CI) (CA INDEX NAME)



RN 623-42-7 HCAPLUS  
CN Butanoic acid, methyl ester (9CI) (CA INDEX NAME)



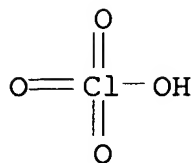
RN 646-06-0 HCAPLUS  
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

Li

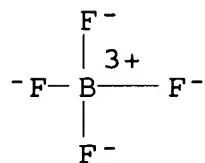
RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

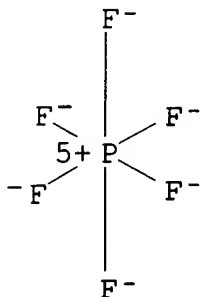
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

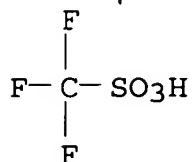
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

INCL 029623100; 429188000; 429329000; 429326000; 429324000; 429330000;  
 429331000; 429332000; 429337000; 429338000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST **nonaq electrolytic** soln secondary battery  
 IT Battery electrolytes  
 Secondary batteries  
 (nonaq. electrolytic solution for secondary battery)  
 IT Fluoropolymers, uses  
 Polyamides, uses  
 Styrene-butadiene rubber, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolytic solution for secondary battery)  
 IT 57-57-8,  $\beta$ -Propiolactone 68-12-2, Dmf, uses 75-05-8,  
 Acetonitrile, uses 78-40-0, Triethyl phosphate 79-20-9,  
 Methyl acetate 96-47-9, 2-Methyltetrahydrofuran 96-48-0,  
 $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-37-3  
 , Ethyl propionate 105-54-4, Ethyl butyrate 105-58-8,  
 Diethyl carbonate 105-66-8, Propyl butyrate  
 106-36-5, Propyl propionate, uses 107-31-3, Methyl formate  
 108-29-2, 4-Methyl- $\gamma$ -Butyrolactone 108-32-7, Propylene  
 carbonate 109-21-7, Butyl butyrate 109-60-4,  
 Propyl acetate 109-94-4, Ethyl formate 109-99-9, Thf, uses  
 110-71-4, 1,2-Dimethoxyethane 110-74-7, Propyl formate 112-48-1,  
 1,2-Dibutoxyethane 115-86-6, Triphenyl phosphate 115-96-8,  
 Tris(2-chloroethyl)phosphate 123-86-4, Butyl acetate  
 123-91-1, 1,4-Dioxane, uses 141-78-6, Ethyl acetate, uses  
 358-63-4, Tris(2,2,2-trifluoroethyl)phosphate 512-56-1, Trimethyl  
 phosphate 513-02-0, Triisopropyl phosphate 513-08-6, Tripropyl  
 phosphate 542-28-9,  $\delta$ -Valerolactone 542-52-9, Dibutyl



carbonate 554-12-1, Methyl propionate 590-01-2,  
 Butyl propionate 592-84-7, Butyl formate 616-38-6, Dimethyl  
 carbonate 623-42-7, Methyl butyrate 623-53-0, Ethyl  
 methyl carbonate 623-96-1, Dipropyl carbonate 629-14-1,  
 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 1330-78-5,  
 Tritolyl phosphate 1679-47-6, 2-Methyl- $\gamma$ -Butyrolactone  
 1679-49-8, 3-Methyl- $\gamma$ -Butyrolactone 2528-39-4, Trihexyl  
 phosphate 4437-85-8, Butylene carbonate 7439-93-2,  
 Lithium, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses  
 7791-03-9, Lithium perchlorate 12022-46-7, Iron lithium  
 oxide (FeLiO<sub>2</sub>) 12031-65-1, Lithium nickel oxide (LiNiO<sub>2</sub>)  
 12031-95-7, Lithium titanium oxide (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>) 12042-37-4, Alli  
 12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>) 12057-22-6, Lzn  
 12057-30-6 12162-79-7, Lithium manganese oxide limno<sub>2</sub>  
 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 12332-29-5, Iron lithium  
 nitride (FeLi<sub>3</sub>N<sub>2</sub>) 12338-02-2 13843-81-7, Lithium dichromate  
 li<sub>2</sub>cr<sub>2</sub>o<sub>7</sub> 14024-11-4, Lithium tetrachloroaluminate  
 14283-07-9, Lithium tetrafluoroborate 14307-35-8, Lithium  
 chromate 15365-14-7, Iron lithium phosphate felipo<sub>4</sub>  
 21324-40-3, Lithium hexafluorophosphate 25743-90-2.  
 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium  
 triflate 35363-40-7, Ethyl propyl carbonate, uses 56525-42-9,  
 Methyl propyl carbonate, uses 61234-06-8, Lithium 80, silicon 20  
 atomic 82906-17-0 97037-11-1 97037-12-2 128975-24-6, Lithium  
 manganese nickel oxide limn<sub>0.5</sub>ni<sub>0.5</sub>o<sub>2</sub> 135573-53-4, Cobalt lithium  
 nickel oxide co<sub>0.1</sub>lini<sub>0.1</sub>o<sub>2</sub> 174421-80-8, Cobalt lithium nitride  
 (Co<sub>0.4</sub>Li<sub>2.6</sub>N) 182442-95-1, Cobalt lithium manganese nickel oxide  
 184912-51-4, Copper lithium nitride (Cu<sub>0.4</sub>Li<sub>2.6</sub>N) 476300-71-7,  
 Lithium carbide (LiC<sub>6</sub>) 808739-94-8

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic solution for secondary  
 battery)

IT 108-78-1, Melamine, uses 14213-97-9D, Orthoborate, chelated salts  
 14265-44-2D, Orthophosphate, chelated salts 24937-79-9, Pvd  
 244761-29-3, Lithium bisoxalatoborate 291298-96-9 321201-33-6  
 383187-24-4 427879-42-3 913080-19-0 913080-20-3

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolytic solution for secondary  
 battery)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)

(styrene-butadiene rubber; nonaq. electrolytic  
 solution for secondary battery)

L52 ANSWER 7 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

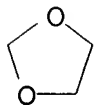
2006:579780 Document No. 145:48607 Energy storage device and module  
 thereof for use in electric vehicle.. Arai, Juichi; Kumashiro,

Yoshiaki; Yoshikawa, Masanori; Kobayashi, Mituru; Yamaki, Takahiro (Japan). U.S. Pat. Appl. Publ. US 2006124973 A1 20060615, 18 pp. (English). CODEN: USXXCO. APPLICATION: US 2005-299742 20051213. PRIORITY: JP 2004-360659 20041214.

AB An object of the present invention is to provide an energy storage device excellent in input/output characteristics at low temps., a module thereof and a vehicle using the module. The present invention provides an energy storage device comprising: a pos. electrode having a region where a reaction accompanied by charge exchange occurs; a neg. electrode having a region where a reaction accompanied by charge exchange occurs; a separator elec. separating the pos. and neg. electrodes and allowing mobile ions to pass there-through; an electrolytic solution having an aprotic **nonaq.** solvent comprising the mobile ions; and a region in at least one of the pos. and neg. electrodes where a charge adsorbing/desorbing reaction occurs.

IT 646-06-0D, Dioxolane, derivative 7439-93-2, Lithium, uses 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6  
RL: DEV (Device component use); USES (Uses)  
(energy storage device and module thereof for use in elec. vehicle)

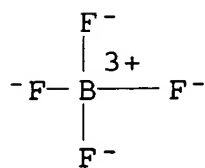
RN 646-06-0 HCAPLUS  
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

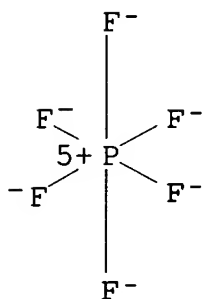
Li

RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

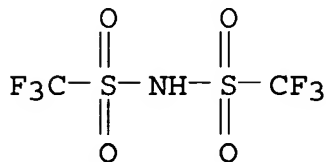
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

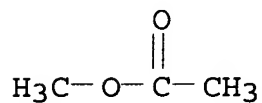
RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)

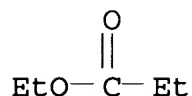


● Li

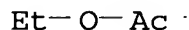
IT 79-20-9, Methyl acetate 105-37-3, Ethylpropionate  
141-78-6, Ethyl acetate, uses 554-12-1,  
Methylpropionate  
RL: MOA (Modifier or additive use); USES (Uses)  
(energy storage device and module thereof for use in elec.  
vehicle)  
RN 79-20-9 HCAPLUS  
CN Acetic acid, methyl ester (CA INDEX NAME)



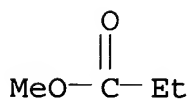
RN 105-37-3 HCAPLUS  
CN Propanoic acid, ethyl ester (CA INDEX NAME)



RN 141-78-6 HCAPLUS  
CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)



RN 554-12-1 HCAPLUS  
CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)



INCL 257223000  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
IT Battery cathodes  
Battery **electrolytes**  
Electric vehicles  
Energy storage systems

(energy storage device and module thereof for use in elec.  
vehicle)

IT 71-43-2D, Benzene, derivative 96-48-0,  $\gamma$ -Butyrolactone  
 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 108-32-7, Propylene carbonate 110-86-1D, Pyridine, derivative  
 287-92-3D, Cyclopentane, derivative 463-79-6D, Carbonic acid, cyclic  
 ester 463-79-6D, Carbonic acid, ester 616-38-6, Dimethyl  
 carbonate 623-53-0, Ethyl methyl carbonate 646-06-0D,  
 Dioxolane, derivative 1120-71-4D, Propane sultone, derivative  
 1332-29-2,  
 Tin oxide 2926-29-6, Sodium trifluoromethanesulfinate  
 3741-38-6D, Ethylene sulfite, derivative 4437-85-8, Butylene carbonate  
 7439-93-2, Lithium, uses 7440-21-3, Silicon, uses  
 7440-31-5, Tin, uses 7447-41-8, Lithium chloride, uses  
 7550-35-8, Lithium bromide 7631-86-9, Silicon oxide, uses  
 7647-14-5, Sodium chloride, uses 7647-15-6, Sodium bromide (NaBr),  
 uses 7681-82-5, Sodium iodide, uses 10377-51-2, Lithium iodide  
 11113-67-0, Iron lithium oxide 11113-84-1, Ruthenium oxide  
 12005-86-6, Sodium hexafluoroarsenate 13463-67-7, Titanium oxide,  
 uses 13755-29-8, Sodium tetrafluoroborate 13824-63-0, Cobalt  
 lithium phosphate colipo4 14283-07-9, Lithium  
 tetrafluoroborate 15290-77-4, 1,1,2,2,3,3,4-  
 Heptafluorocyclopentane 15365-14-7, Iron lithium phosphate felipo4  
 16734-12-6D, Disulfide, derivative 21324-39-0, Sodium  
 hexafluorophosphate 21324-40-3, Lithium  
 hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
 39300-70-4, Lithium nickel oxide 39457-42-6, Lithium manganese  
 oxide 52627-24-4, Cobalt lithium oxide 90076-65-6  
 91742-21-1 132404-42-3 132843-44-8 152894-04-7 156088-05-0  
 164982-97-2 412030-34-3, Lithium tetrakis(trifluoroacetoxy)borate  
 412030-35-4, Lithium tetrakis(pentafluoropropoxy)borate  
 607706-67-2, Cobalt lithium manganese nickel oxide ((Co,Mn,Ni)LiO2)  
 757954-84-0, Chromium lithium phosphate (CrO-1LiO-2(PO4))  
 889766-69-2 889766-70-5  
 RL: DEV (Device component use); USES (Uses)  
 (energy storage device and module thereof for use in elec.  
 vehicle)

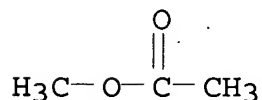
IT 79-20-9, Methyl acetate 100-66-3, Methoxybenzene, uses  
 105-37-3, Ethylpropionate 141-78-6, Ethyl acetate,  
 uses 321-28-8, 2-Fluoroanisole 420-12-2, Ethylene sulfide  
 512-56-1, Trimethyl phosphate 554-12-1, Methylpropionate  
 872-36-6, Vinylene carbonate 882-33-7, Diphenyl disulfide  
 1120-71-4, Propane sultone 1628-89-3, 2-Methoxypyridine  
 4427-96-7, Vinylethylene carbonate 93337-21-4, Methoxypyridine  
 139064-00-9, Heptafluorocyclopentane 163702-05-4, Nonafluorobutyl  
 ethyl ether 163702-07-6, Nonafluorobutyl methyl ether  
 346417-97-8, Cobalt lithium manganese nickel oxide

(Co<sub>0.33</sub>LiMn<sub>0.33</sub>Ni<sub>0.33</sub>O<sub>2</sub>)

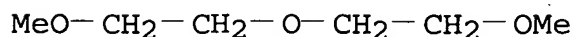
RL: MOA (Modifier or additive use); USES (Uses)

(energy storage device and module thereof for use in elec. vehicle)

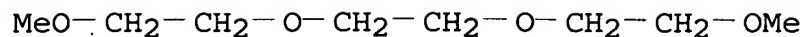
- L52 ANSWER 8 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2006:544665 Document No. 145:11413 Nickel-based alloys as cathode support materials in electrochemical cells containing **nonaqueous electrolytes**. Frysz, Christine; Brown, W. Richard; Kreidler, Peter A.; Smesko, Sally Ann; Nuwer, Karen (USA). U.S. Pat. Appl. Publ. US 2006121354 A1 20060608, 22 pp. (English). CODEN: USXXCO. APPLICATION: US 2004-7534 20041208.
- AB Nickel-based alloys are provided for use as a pos. electrode current collector in a solid cathode, **nonaq. liquid electrolyte**, alkali metal anode active electrochem. cell. The nickel-based alloys are characterized by chemical compatibility with aggressive cell environments, high corrosion resistance and resistance to fluorination and passivation at elevated temps., thus improving the longevity and performance of the electrochem. cell. The cell can be of either a primary or a secondary configuration.
- IT 79-20-9, Methyl acetate 111-96-6, Diglyme 112-49-2, Triglyme 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6
- RL: DEV (Device component use); USES (Uses)  
 (nickel-based alloys as cathode support materials in electrochem. cells containing **nonaq. electrolytes**)
- RN 79-20-9 HCAPLUS
- CN Acetic acid, methyl ester (CA INDEX NAME)



- RN 111-96-6 HCAPLUS
- CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



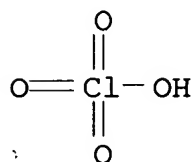
- RN 112-49-2 HCAPLUS
- CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

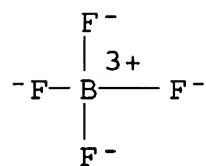
Li

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



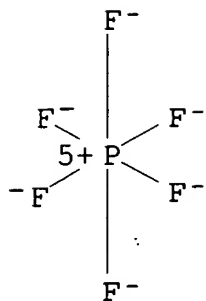
● Li

RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

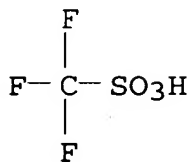


● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

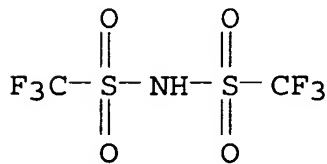
● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



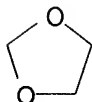
● Li



INCL 429245000; 029623100; 420442000; 420588000  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56  
IT Primary batteries  
Secondary batteries  
(lithium; nickel-based alloys as cathode support materials in  
electrochem. cells containing **nonaq. electrolytes**  
)  
IT Battery cathodes  
(nickel-based alloys as cathode support materials in electrochem.  
cells containing **nonaq. electrolytes**)  
IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,  
uses 79-20-9, Methyl acetate 96-48-0,  
 $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,  
Diethyl carbonate 108-20-3, Diisopropyl ether 108-29-2,  
 $\gamma$ -Valerolactone 108-32-7, Propylene carbonate 109-99-9,  
Thf, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6,  
Diglyme 112-49-2, Triglyme 127-19-5, Dma 143-24-8,  
Tetraglyme 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl  
carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl  
carbonate 629-14-1, 1,2-Diethoxyethane 872-50-4, uses  
1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide, uses  
1344-70-3, Copper oxide 2923-17-3 2923-20-8 4437-85-8,  
Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane  
7439-93-2, Lithium, uses 7791-03-9, Lithium  
perchlorate 11104-61-3, Cobalt oxide 11105-02-5, Silver vanadium  
oxide 11115-78-9, Copper sulfide 11126-12-8, Iron sulfide  
12031-65-1, Lithium nickel oxide (LiNiO<sub>2</sub>) 12039-13-3, Titanium  
sulfide (TiS<sub>2</sub>) 12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>)  
12057-24-8, Lithia, uses 12068-85-8, Iron disulfide 12190-79-3,  
Cobalt lithium oxide (CoLiO<sub>2</sub>) 12604-59-0, N10276 12606-02-9,  
Alloy 600 12671-92-0 12682-01-8, Alloy 625 12766-43-7, N08825  
12789-09-2, Copper vanadium oxide 13453-75-3 14024-11-4, Lithium  
tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate  
14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium  
tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate  
21324-40-3, Lithium hexafluorophosphate 29935-35-1,  
Lithium hexafluoroarsenate 33454-82-9, Lithium triflate  
35363-40-7, Ethyl propyl carbonate, uses 51311-17-2, Carbon  
fluoride 56525-42-9, Methyl propyl carbonate, uses  
90076-65-6 98686-65-8 99693-83-1, 25-6Mo 115028-88-1  
131344-56-4, Cobalt lithium nickel oxide 132404-42-3  
159668-67-4, Alloy 686 181183-66-4, Copper silver vanadium oxide  
256650-80-3, Cobalt lithium tin oxide (Co<sub>0.92</sub>LiSn<sub>0.08</sub>O<sub>2</sub>)  
RL: DEV (Device component use); USES (Uses)  
(nickel-based alloys as cathode support materials in electrochem.

cells containing **nonaq. electrolytes**)

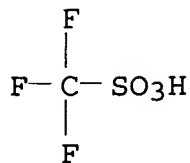
L52 ANSWER 9 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
2005:1132717 Document No. 143:389853 High discharge capacity lithium  
battery. Marple, Jack W.; Wemple, Michael W. (USA). U.S. Pat.  
Appl. Publ. US 2005233214 A1 20051020, 23 pp., Cont.-in-part of U.S.  
Ser. No. 719,425. (English). CODEN: USXXCO. APPLICATION: US  
2004-20339 20041222. PRIORITY: US 2003-719425 20031121.  
AB A lithium/iron disulfide electrochem. battery cell with a high  
discharge capacity is disclosed. The cell has a lithium neg.  
electrode, an iron disulfide pos. electrode and a **nonaq.  
electrolyte**. The iron disulfide of the pos. electrode has a  
controlled average particle size range which allows the electrochem.  
cells to exhibit desired properties in both low and high rate  
applications. In various embodiments, the iron disulfide particles  
are wet milled, preferably utilizing a media mill or milled  
utilizing a non-mech. mill such as a jet mill, which reduces the  
iron disulfide particles to a desired average particle size range for  
incorporation into the pos. electrode.  
IT 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses  
33454-82-9, Lithium trifluoromethanesulfonate  
RL: DEV (Device component use); USES (Uses)  
(high discharge capacity lithium battery)  
RN 646-06-0 HCAPLUS  
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

Li

RN 33454-82-9 HCAPLUS  
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX  
NAME)



● Li

IT 112-07-2, Butyl glycol acetate  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (high discharge capacity lithium battery)  
 RN 112-07-2 HCAPLUS  
 CN Ethanol, 2-butoxy-, acetate (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

n-BuO-CH<sub>2</sub>-CH<sub>2</sub>-OAc

IC ICM H01M004-58  
 ICS H01M010-40; H01M004-04  
 INCL 429221000; 429094000; 429337000; 429341000; 429336000; 429339000;  
 429328000; 429329000; 252182100  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 IT 300-87-8, 3,5-Dimethyl-isoxazole 629-14-1, 1,2-Diethoxyethane  
 646-06-0, 1,3-Dioxolane 7429-90-5, Aluminum, uses  
 7439-93-2, Lithium, uses 10377-51-2, Lithium iodide  
 12068-85-8, Iron disulfide 12798-95-7 33454-82-9,  
 Lithium trifluoromethanesulfonate  
 RL: DEV (Device component use); USES (Uses)  
 (high discharge capacity lithium battery)  
 IT 79-01-6, Trichloroethylene, uses 112-07-2, Butyl glycol  
 acetate 872-50-4, n-Methyl-2-pyrrolidone, uses 7732-18-5, Water,  
 uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (high discharge capacity lithium battery)

L52 ANSWER 10 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2005:1129877 Document No. 143:408181 Secondary lithium batteries with  
 good cycle efficiency and durability. Imasaka, Koji; Fujioka,  
 Yuichi; Hashimoto, Tsutomu; Tajima, Hidehiko; Adachi, Kazuyuki;  
 Shibata, Hiroyuki; Kai, Masaaki (Mitsubishi Heavy Industries, Ltd.,  
 Japan; Kyushu Electric Power Co., Ltd.). Jpn. Kokai Tokkyo Koho JP  
 2005294028 A 20051020, 12 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 2004-107291 20040331.

AB The batteries contain Li-containing mixed oxides as cathode active mass, Li-doped graphite as anode active mass, and **nonaq. electrolytes**, and show terminal potential of discharge against Li  $\leq 0.5$  V.

IT 7439-93-2, Lithium, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(doped in graphite; secondary lithium batteries with good cycle efficiency and durability)

RN 7439-93-2 HCAPLUS

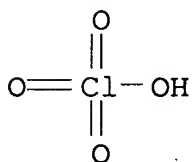
CN Lithium (CA INDEX NAME)

Li

IT 7791-03-9, Lithium perchlorate 14283-07-9  
, Lithium tetrafluoroborate 21324-40-3,  
Lithium hexafluorophosphate 33454-82-9,  
Lithium trifluoromethanesulfonate  
RL: DEV (Device component use); USES (Uses)  
(**electrolyte salt**; secondary lithium  
batteries with good cycle efficiency and durability)

RN 7791-03-9 HCAPLUS

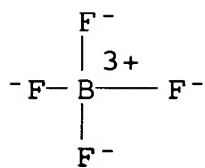
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

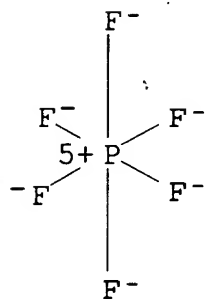
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

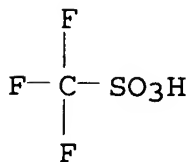
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

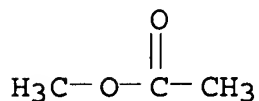
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)

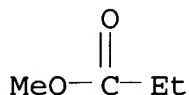


● Li

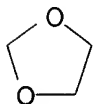
IT 79-20-9, Methyl acetate 554-12-1, Methyl  
 propionate 646-06-0, 1,3-Dioxolane 1072-47-5,  
 4-Methyl-1,3-dioxolane  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte solvent; secondary lithium batteries with  
 good cycle efficiency and durability)  
 RN 79-20-9 HCAPLUS  
 CN Acetic acid, methyl ester (CA INDEX NAME)



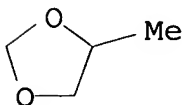
RN 554-12-1 HCAPLUS  
 CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)



RN 646-06-0 HCAPLUS  
 CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 1072-47-5 HCAPLUS  
 CN 1,3-Dioxolane, 4-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 ICS H01M004-02; H01M004-58  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium battery mixed oxide manganese cathode; graphite lithium

- doped anode battery; **nonaq electrolyte** ethylene dimethyl carbonate; ethyl methyl carbonate vinylene **nonaq electrolyte**
- IT Battery anodes  
Battery cathodes  
Battery **electrolytes**  
(secondary lithium batteries with good cycle efficiency and durability)
- IT **7439-93-2**, Lithium, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(doped in graphite; secondary lithium batteries with good cycle efficiency and durability)
- IT 7447-41-8, Lithium chloride, uses **7791-03-9**,  
**Lithium perchlorate** 10377-51-2, **Lithium iodide**  
14024-11-4, **Lithium tetrachloroaluminate**  
**14283-07-9**, **Lithium tetrafluoroborate**  
18424-17-4, **Lithium hexafluoroantimonate**  
**21324-40-3**, **Lithium hexafluorophosphate**  
29935-35-1, **Lithium hexafluoroarsenate** **33454-82-9**  
, **Lithium trifluoromethanesulfonate** 131651-65-5,  
**Lithium nonafluorobutanesulfonate**  
RL: DEV (Device component use); USES (Uses)  
(**electrolyte salt**; secondary lithium batteries with good cycle efficiency and durability)
- IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses **79-20-9**, Methyl acetate  
96-47-9, 2-Methyltetrahydrofuran 96-48-0,  $\gamma$ -Butyrolactone  
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
107-31-3, Methyl formate 108-29-2,  $\gamma$ -Valerolactone  
108-32-7, Propylene carbonate 109-87-5, Dimethoxymethane  
109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane  
126-33-0, Sulfolane 127-19-5, N,N-Dimethylacetamide  
**554-12-1**, Methyl propionate 616-38-6, Dimethyl carbonate  
623-53-0, Ethyl methyl carbonate **646-06-0**, 1,3-Dioxolane  
872-93-5, 3-Methylsulfolane **1072-47-5**,  
4-Methyl-1,3-dioxolane 4437-85-8, Butylene carbonate 19836-78-3  
RL: DEV (Device component use); USES (Uses)  
(**electrolyte solvent**; secondary lithium batteries with good cycle efficiency and durability)
- IT 872-36-6, Vinylene carbonate  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(in **nonaq. electrolyte**; secondary lithium batteries with good cycle efficiency and durability)

2005:735154 Document No. 143:196855 Protected active metal electrode and battery cell structures with **nonaqueous** interlayer architecture. Visco, Steven J.; Katz, Bruce D.; Nimon, Yevgeniy S.; De Jonghe, Lutgard C. (Polyplus Battery Company, USA).. U.S. Pat. Appl. Publ. US 2005175894 A1 20050811, 20 pp. (English). CODEN: USXXCO. APPLICATION: US 2004-824944 20040414. PRIORITY: US 2004-542532P 20040206; US 2004-548231P 20040227.

AB The invention concerns active metal and active metal intercalation electrode structures and battery cells having ionically conductive protective architecture including an active **metal** (e.g., **lithium**) conductive impervious layer separated from the electrode (anode) by a porous separator impregnated with a **non-aqueous electrolyte** (anolyte). This protective architecture prevents the active metal from deleterious reaction with the environment on the other (cathode) side of the impervious layer, which may include aqueous or **nonaq.** liquid **electrolytes** (catholytes) and/or a variety electrochem. active materials, including liquid, solid and gaseous oxidizers. Safety additives and designs that facilitate manufacture are also provided.

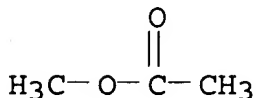
IT 79-20-9, Methyl acetate 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6

RL: DEV (Device component use)

(protected active metal electrode and battery cell structures with **nonaq.** interlayer architecture)

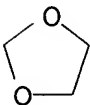
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



RN 646-06-0 HCAPLUS

CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS

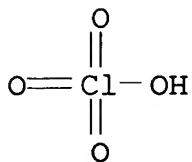


CN Lithium (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS

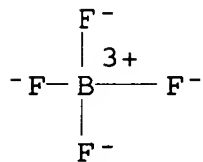
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 14283-07-9 HCAPLUS

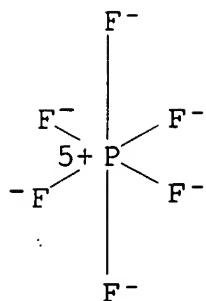
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



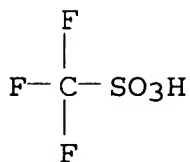
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

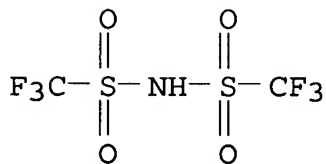
● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-60  
INCL 429212000  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72  
IT Alloys, uses  
RL: DEV (Device component use)  
(hydrogen absorbing alloy; protected active metal electrode and  
battery cell structures with **nonaq.** interlayer  
architecture)  
IT Primary batteries  
Secondary batteries  
(**lithium**; protected active metal electrode  
and battery cell structures with **nonaq.** interlayer  
architecture)  
IT Polymers, uses  
RL: DEV (Device component use)  
(microporous; protected active metal electrode and battery cell  
structures with **nonaq.** interlayer architecture)  
IT Carbonates, uses  
RL: DEV (Device component use)  
(organic; protected active metal electrode and battery cell  
structures with **nonaq.** interlayer architecture)  
IT Battery anodes  
Battery **electrolytes**  
Ceramics  
Gelation agents  
Glass ceramics  
Ionic liquids  
Oxidizing agents  
Polymerization catalysts  
Primary batteries  
Primary battery separators  
Seawater  
Secondary batteries  
(protected active metal electrode and battery cell structures  
with **nonaq.** interlayer architecture)  
IT Esters, uses  
Ethers, uses  
Intercalation compounds  
Ionomers  
Lactones  
Polysulfides  
Sulfones  
Transition metal oxides  
RL: DEV (Device component use)  
(protected active metal electrode and battery cell structures

- with **nonaq.** interlayer architecture)
- IT Fluoropolymers, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (protected active metal electrode and battery cell structures  
 with **nonaq.** interlayer architecture)
- IT Polyoxyalkylenes, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (protected active metal electrode and battery cell structures  
 with **nonaq.** interlayer architecture)
- IT Glass, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (protected active metal electrode and battery cell structures  
 with **nonaq.** interlayer architecture)
- IT Hydrides  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (protected active metal electrode and battery cell structures  
 with **nonaq.** interlayer architecture)
- IT Fuel cells  
 (proton exchange membrane; protected active metal electrode and  
 battery cell structures with **nonaq.** interlayer  
 architecture)
- IT Quaternary ammonium compounds, uses  
 RL: DEV (Device component use)  
 (tetraalkyl; protected active metal electrode and battery cell  
 structures with **nonaq.** interlayer architecture)
- IT 1310-53-8, Germanium oxide (GeO<sub>2</sub>), uses 1314-23-4, Zirconia, uses  
 1314-56-3, Phosphorus oxide (P<sub>2</sub>O<sub>5</sub>), uses 1344-28-1, Alumina, uses  
 7631-86-9, Silica, uses 12024-21-4, Gallium oxide (Ga<sub>2</sub>O<sub>3</sub>)  
 12057-24-8, Lithia, uses 13463-67-7, Titania, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (glass ceramic; protected active metal electrode and battery cell  
 structures with **nonaq.** interlayer architecture)
- IT 7446-09-5, Sulfur dioxide, processes 7632-00-0, Sodium nitrite  
 7722-84-1, Hydrogen peroxide, processes 7757-83-7, Sodium sulfite  
 7758-09-0, Potassium nitrite 7782-44-7, Oxygen, processes  
 10102-44-0, Nitrogen dioxide, processes 10117-38-1, Potassium  
 sulfite 14915-07-2, Peroxide  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
 process); PROC (Process)  
 (protected active metal electrode and battery cell structures  
 with **nonaq.** interlayer architecture)
- IT 64-19-7, Acetic acid, uses 71-47-6, Formate, uses 79-20-9  
 , Methyl acetate 96-47-9, 2-Methyltetrahydrofuran 96-49-1,  
 Ethylene carbonate 105-58-8, Diethyl carbonate 107-31-3, Methyl  
 formate 108-32-7, Propylene carbonate 109-99-9, Thf, uses  
 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 546-89-4,  
 Lithium acetate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl

methyl carbonate 646-06-0, 1,3-Dioxolane 1301-96-8,  
 Silver oxide (AgO) 1310-65-2, Lithium hydroxide 1332-37-2, Iron  
 oxide, uses 1335-25-7, Lead oxide 7429-90-5, Aluminum, uses  
 7439-93-2, Lithium, uses 7439-95-4, Magnesium, uses  
 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0,  
 Antimony, uses 7440-43-9, Cadmium, uses 7440-44-0, Carbon, uses  
 7440-55-3, Gallium, uses 7440-66-6, Zinc, uses 7440-69-9,  
 Bismuth, uses 7440-70-2, Calcium, uses 7440-74-6, Indium, uses  
 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide  
 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid,  
 uses 7664-93-9, Sulfuric acid, uses 7719-09-7, Thionyl chloride  
 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide  
 11129-60-5, Manganese oxide 12026-04-9, Nickel hydroxide oxide  
 NiOOH 12124-97-9, Ammonium bromide 12125-02-9, Ammonium  
 chloride, uses 14283-07-9, Lithium tetrafluoroborate  
 16749-13-6D, Phosphonium, compound 16969-45-2D, Pyridinium, derivs.  
 17009-90-4D, Imidazolium, derivs. 21324-40-3, Lithium  
 hexafluorophosphate 25067-64-5 29935-35-1, Lithium  
 hexafluoroarsenate 33454-82-9, Lithium triflate  
 74432-42-1, Lithium polysulfide 90076-65-6 132843-44-8  
 155371-19-0, 1-Ethyl-3-methylimidazolium hexafluorophosphate  
 174501-64-5, 1-Butyl-3-methylimidazolium hexafluorophosphate  
 244193-50-8, 1-Hexyl-3-methylimidazolium tetrafluoroborate  
 328090-25-1, 1-Ethyl-3-methylimidazolium tosylate

RL: DEV (Device component use)

(protected active metal electrode and battery cell structures  
with **nonaq.** interlayer architecture)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer  
24937-79-9, PvdF 25014-41-9, Polyacrylonitrile 25322-68-3, PEO

RL: MOA (Modifier or additive use); USES (Uses)

(protected active metal electrode and battery cell structures  
with **nonaq.** interlayer architecture)

IT 1333-74-0P, Hydrogen, uses

RL: SPN (Synthetic preparation); TEM (Technical or engineered  
material use); PREP (Preparation); USES (Uses)

(protected active metal electrode and battery cell structures  
with **nonaq.** interlayer architecture)

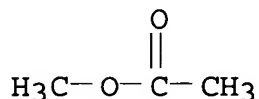
L52 ANSWER 12 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2005:155847 Document No. 142:222647 Secondary lithium battery equipped  
with lithium-aluminum alloy anode and **electrolyte** solution  
containing additive. Yoshimura, Seiji; Imachi, Naoki; Saisho,  
Keiji; Takeuchi, Masanobu; Matsuda, Shigeki; Nakamizo, Shiori (Sanyo  
Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2005050585 A  
20050224, 17 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
2003-203970 20030730.

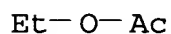
AB The claimed battery is equipped with an anode containing a Li-Al alloy

and a **nonaq. electrolyte** solution containing an alc., an aldehyde, and/or a carboxylic acid ester. The battery provides high storage stability by suppressing reaction of the anode with the **electrolyte** solution under charged condition.

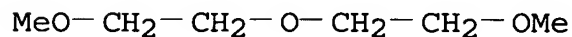
IT 79-20-9, Methyl acetate 141-78-6, Ethyl acetate, uses  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (additive in **nonaq. electrolyte** solution for secondary lithium battery using lithium-aluminum alloy anode)  
 RN 79-20-9 HCAPLUS  
 CN Acetic acid, methyl ester (CA INDEX NAME)



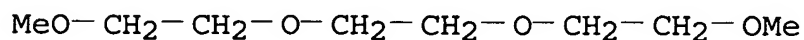
RN 141-78-6 HCAPLUS  
 CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)



IT 111-96-6, Diethylene glycol dimethyl ether 112-49-2, Triethylene glycol dimethyl ether  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte solvent; additive in **nonaq. electrolyte** solution for secondary lithium battery using lithium-aluminum alloy anode)  
 RN 111-96-6 HCAPLUS  
 CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS  
 CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium

tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate

33454-82-9, Lithium trifluoromethanesulfonate

90076-65-6, Lithium bis(trifluoromethylsulfonyl)imide

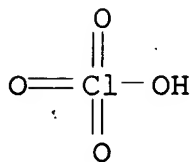
RL: DEV (Device component use); USES (Uses)

(electrolyte; additive in nonaq.

electrolyte solution for secondary lithium battery using  
lithium-aluminum alloy anode)

RN 7791-03-9 HCAPLUS

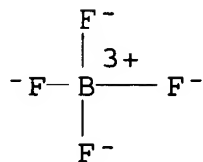
CN Perchloric acid, lithium salt (8CI; 9CI) (CA INDEX NAME)



● Li

RN 14283-07-9 HCAPLUS

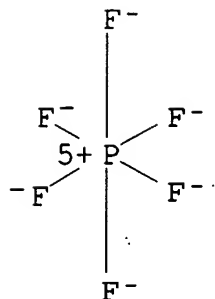
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

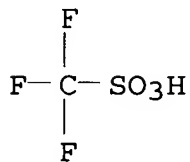
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

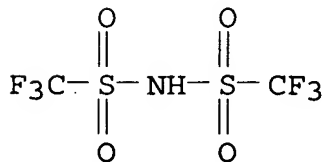
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li



IC ICM H01M010-40  
ICS C22C021-00; H01M004-02; H01M004-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST alc **nonaq electrolyte** lithium secondary battery;  
aldehyde **nonaq electrolyte** lithium secondary  
battery; carboxylate ester **nonaq electrolyte**  
lithium secondary battery; aluminum lithium alloy anode secondary  
battery  
IT Battery anodes  
Battery **electrolytes**  
(additive in **nonaq. electrolyte** solution for  
secondary lithium battery using lithium-aluminum alloy anode)  
IT Alcohols, uses  
Aldehydes, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(additive in **nonaq. electrolyte** solution for  
secondary lithium battery using lithium-aluminum alloy anode)  
IT Carboxylic acids, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(esters; additive in **nonaq. electrolyte** solution  
for secondary lithium battery using lithium-aluminum alloy anode)  
IT Secondary batteries  
(lithium; additive in **nonaq. electrolyte**  
solution for secondary lithium battery using lithium-aluminum alloy  
anode)  
IT 50-00-0, Formaldehyde, uses 64-17-5, Ethanol, uses 67-56-1,  
Methanol, uses 71-23-8, Propanol, uses 75-07-0, Acetaldehyde,  
uses 79-20-9, Methyl acetate 107-31-3, Methyl formate  
109-86-4, 2-Methoxyethanol 123-38-6, Propionaldehyde, uses  
141-78-6, Ethyl acetate, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(additive in **nonaq. electrolyte** solution for  
secondary lithium battery using lithium-aluminum alloy anode)  
IT 142703-60-4  
RL: DEV (Device component use); USES (Uses)  
(anode; additive in **nonaq. electrolyte** solution  
for secondary lithium battery using lithium-aluminum alloy anode)  
IT 96-48-0,  $\gamma$ -Butyrolactone 108-32-7, Propylene carbonate  
111-96-6, Diethylene glycol dimethyl ether 112-49-2  
, Triethylene glycol dimethyl ether 143-24-8, Tetraethylene glycol  
dimethyl ether  
RL: DEV (Device component use); USES (Uses)  
(**electrolyte** solvent; additive in **nonaq.**

**electrolyte** solution for secondary lithium battery using lithium-aluminum alloy anode)

IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethylsulfonyl)imide 132404-42-3, Lithium tris(trifluoromethylsulfonyl)methanide 132843-44-8, Lithium bis(pentafluoroethylsulfonyl)imide 844471-65-4, Lithium (trifluoromethylsulfonyl)(pentafluoroethylsulfonyl)imide  
 RL: DEV (Device component use); USES (Uses)  
 (**electrolyte**; additive in **nonaq.**  
**electrolyte** solution for secondary lithium battery using lithium-aluminum alloy anode)

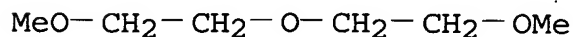
L52 ANSWER 13 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2004:722790 Document No. 141:210148 Heat resistant lithium battery. Fukuoka, Satoru; Morita, Seiji; Nishiguchi, Nobuhiro; Naruse, Satoru; Muraki, Masayuki; Imanishi, Masahiro (Japan). U.S. Pat. Appl. Publ. US 2004170904 A1 20040902, 14 pp. (English). CODEN: USXXCO. APPLICATION: US 2004-787749 20040227. PRIORITY: JP 2003-54475 20030228; JP 2003-340864 20030930.

AB The present invention provides a cell that does not impair heat resistant safety and electrochem. characteristics such as a discharge characteristic, and enhances long-period reliability. In the cell of the present invention, a **nonaq.** solvent has, among compds. represented by the general formula: X-(O-C<sub>2</sub>H<sub>4</sub>)<sub>n</sub>-O-Y (where X and Y are independently an alkyl group (C<sub>1</sub>-4), and n is 1-5), at least one solvent having a b.p. of 200° or higher, and has, among compds. represented by the general formula, at least one solvent having a b.p. of lower than 200°; and the total volume ratio at 23° of the compds. represented by the general formula is 95-100% of the **nonaq.** solvent.

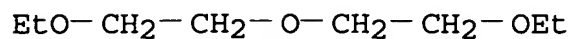
IT 111-96-6, Diethylene glycol dimethyl ether 112-36-7, Diethylene glycol diethyl ether 112-49-2, Triethylene glycol dimethyl ether 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide  
 RL: DEV (Device component use); USES (Uses)  
 (heat resistant lithium battery)

RN 111-96-6 HCAPLUS

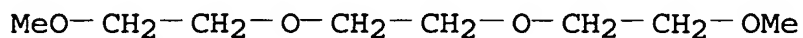
CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



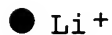
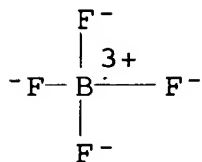
RN 112-36-7 HCAPLUS  
 CN Ethane, 1,1'-oxybis[2-ethoxy- (9CI) (CA INDEX NAME)



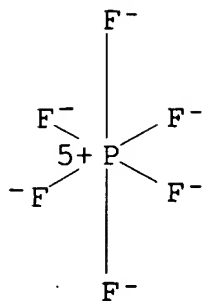
RN 112-49-2 HCAPLUS  
 CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



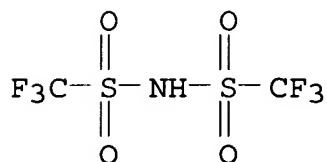
RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 90076-65-6 HCAPLUS

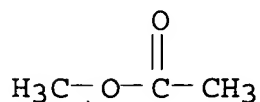
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
lithium salt (9CI) (CA INDEX NAME)

● Li

IT 79-20-9, Methyl acetate 108-24-7, Acetic anhydride  
141-78-6, Ethyl acetate, usesRL: MOA (Modifier or additive use); USES (Uses)  
(heat resistant lithium battery)

RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



RN 108-24-7 HCAPLUS

CN Acetic acid, anhydride (9CI) (CA INDEX NAME)

Ac-O-Ac

RN 141-78-6 HCAPLUS  
CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)

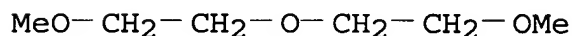
Et-O-Ac

IC ICM H01M010-40  
INCL 429326000; 429329000; 429333000  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
IT Battery **electrolytes**  
Safety  
Swelling, physical  
(heat resistant lithium battery)  
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate  
110-71-4, 1,2-Dimethoxyethane 111-96-6, Diethylene glycol  
dimethyl ether 112-36-7, Diethylene glycol diethyl ether  
112-49-2, Triethylene glycol dimethyl ether 112-73-2,  
Diethylene glycol dibutyl ether 143-24-8, Tetraethylene glycol  
dimethyl ether 463-79-6D, Carbonic acid, ester, cyclic  
14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
Lithium hexafluorophosphate 90076-65-6, Lithium  
bis(trifluoromethanesulfonyl)imide 132843-44-8, Lithium  
bis(pentafluoroethanesulfonyl)imide  
RL: DEV (Device component use); USES (Uses)  
(heat resistant lithium battery)  
IT 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses  
79-20-9, Methyl acetate 85-44-9, Phthalic anhydride  
108-24-7, Acetic anhydride 109-94-4, Ethyl formate  
110-45-2, IsoAmyl formate 110-74-7, n-Propyl formate  
141-78-6, Ethyl acetate, uses 144-62-7, Oxalic acid, uses  
542-55-2, Isobutyl formate 592-84-7, n-Butyl formate 625-55-8,  
IsoPropyl formate 638-49-3, n-Amyl formate  
RL: MOA (Modifier or additive use); USES (Uses)  
(heat resistant lithium battery)

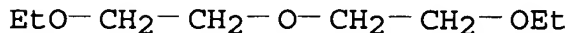
L52 ANSWER 14 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
2004:722789 Document No. 141:210147 Heat resistant lithium battery.  
Fukuoka, Satoru; Morita, Seiji; Nishiguchi, Nobuhiro; Naruse,  
Satoru; Muraki, Masayuki; Imanishi, Masahiro (Sanyo Electric Co.,  
Ltd., Japan). U.S. Pat. Appl. Publ. US 2004170903 A1 20040902, 14  
pp. (English). CODEN: USXXCO. APPLICATION: US 2004-785970

20040226. PRIORITY: JP 2003-54475 20030228; JP 2003-340864 20030930.

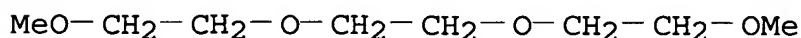
- AB The present invention provides a cell that does not impair heat resistant safety and electrochem. characteristics such as a discharge characteristic, and enhances long-period reliability. In the cell of the present invention, a **nonaq.** solvent has, among compds. represented by the general formula:  $X-(O-C_2H_4)_n-O-Y$  (where X and Y are independently an alkyl group (C1-4), and n is 1-5), at least one solvent having a b.p. of 200° or higher, and has, among compds. represented by the general formula, at least one solvent having a b.p. of lower than 200°; and the total volume ratio at 23° of the compds. represented by the general formula is 95 to 100% of the **nonaq.** solvent.
- IT 111-96-6, Diethylene glycol dimethyl ether 112-36-7, Diethylene glycol diethyl ether 112-49-2, Triethylene glycol dimethyl ether 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide  
RL: DEV (Device component use); USES (Uses)  
(heat resistant lithium battery)
- RN 111-96-6 HCAPLUS
- CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)]



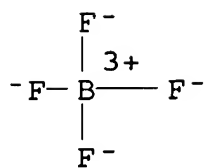
- RN 112-36-7 HCAPLUS
- CN Ethane, 1,1'-oxybis[2-ethoxy- (9CI) (CA INDEX NAME)]



- RN 112-49-2 HCAPLUS
- CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

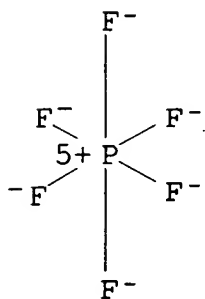


- RN 14283-07-9 HCAPLUS
- CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

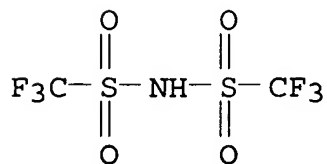
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

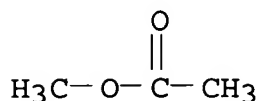
RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)

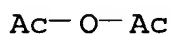


● Li

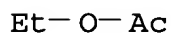
IT 79-20-9, Methyl acetate 108-24-7, Acetic anhydride  
 141-78-6, Ethyl acetate, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (heat resistant lithium battery)  
 RN 79-20-9 HCAPLUS  
 CN Acetic acid, methyl ester (CA INDEX NAME)



RN 108-24-7 HCAPLUS  
 CN Acetic acid, anhydride (9CI) (CA INDEX NAME)



RN 141-78-6 HCAPLUS  
 CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 INCL 429326000; 429329000; 429330000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 IT Battery **electrolytes**  
 Safety  
 Swelling, physical  
 (heat resistant lithium battery)  
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate  
 110-71-4, 1,2-Dimethoxyethane 111-96-6, Diethylene glycol  
 dimethyl ether 112-36-7, Diethylene glycol diethyl ether  
 112-49-2, Triethylene glycol dimethyl ether 112-73-2,  
 Diethylene glycol dibutyl ether 143-24-8, Tetraethylene glycol  
 dimethyl ether 463-79-6D, Carbonic acid, ester, cyclic  
 14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
 Lithium hexafluorophosphate 90076-65-6, Lithium  
 bis(trifluoromethanesulfonyl)imide 132843-44-8, Lithium  
 bis(pentafluoroethanesulfonyl)imide  
 RL: DEV (Device component use); USES (Uses)  
 (heat resistant lithium battery)



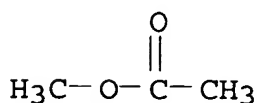
IT 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses  
 79-20-9, Methyl acetate 85-44-9, Phthalic anhydride  
 108-24-7, Acetic anhydride 109-94-4, Ethyl formate  
 110-74-7, n-Propyl formate 141-78-6, Ethyl acetate, uses  
 144-62-7, Oxalic acid, uses 592-84-7, n-Butyl formate 625-55-8,  
 Isopropyl formate  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (heat resistant lithium battery)

L52 ANSWER 15 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2004:117314 Document No. 140:131179 Silver vanadium oxide provided  
 with a metal oxide coating for cathodes of lithium batteries.  
 Leising, Randolph; Takeuchi, Esther S. (Wilson Greatbatch  
 Technologies, Inc., USA). Eur. Pat. Appl. EP 1388905 A2 20040211,  
 13 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR,  
 IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR,  
 BG, CZ, EE, HU, SK. (English). CODEN: EPXXDW. APPLICATION: EP  
 2003-254869 20030805. PRIORITY: US 2002-401425P 20020806.

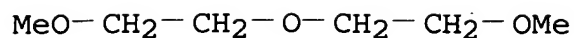
AB An improved cathode material for **nonaq.**  
**electrolyte** lithium electrochem. cell is described. The  
 preferred active material is e-phase silver vanadium oxide  
 (Ag2V4O11) coated with a protective layer of a metal oxide,  
 preferably  $\gamma$ -phase SVO (Ag1.2V3O1.8). The SVO core provides  
 high capacity and rate capability while the protective coating  
 reduces reactivity of the active particles with **electrolyte**  
 to improve the long-term stability of the cathode.

IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
 112-49-2, Triglyme 7439-93-2, Lithium, uses  
 7791-03-9, Lithium perchlorate 14283-07-9, Lithium  
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate  
 33454-82-9, Lithium triflate 90076-65-6  
 RL: DEV (Device component use); USES (Uses)  
 (silver vanadium oxide provided with metal oxide coating for  
 cathodes of lithium batteries)

RN 79-20-9 HCAPLUS  
 CN Acetic acid, methyl ester (CA INDEX NAME)

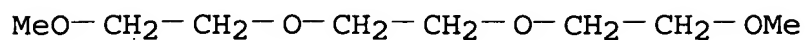


RN 111-96-6 HCAPLUS  
 CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



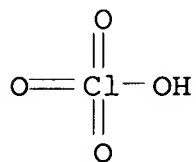
RN 7439-93-2 HCAPLUS

CN Lithium (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS

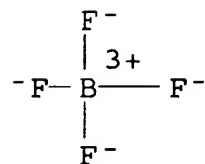
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 14283-07-9 HCAPLUS

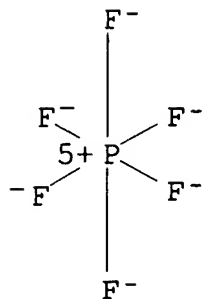
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

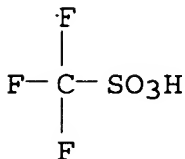
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

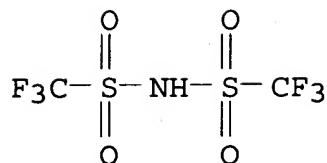
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI). (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-36  
ICS H01M004-48; H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 63

ST **lithium** battery cathode **metal** coated silver  
vanadium oxide; implantable medical device lithium battery

IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,  
uses 79-20-9, Methyl acetate 96-48-0,  
γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,  
Diethyl carbonate 108-29-2, γ-Valerolactone 108-32-7,  
Propylene carbonate 109-99-9, Thf, uses 110-71-4,  
1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2,  
Triglyme 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme  
556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate  
623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate  
629-14-1, 1,2-Diethoxyethane 872-50-4, n-Methyl-2-pyrrolidone,  
uses 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium  
oxide (V2O5), uses 1317-37-9, Iron sulfide Fes 2923-17-3  
4437-85-8, Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane  
7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses  
7440-02-0, Nickel, uses 7440-06-4, Platinum, uses 7440-25-7,  
Tantalum, uses 7440-32-6, Titanium, uses 7440-57-5, Gold, uses  
7784-01-2, Silver chromate ag2cro4 7791-03-9, Lithium  
perchlorate 11105-02-5, Silver vanadium oxide 12019-06-6, Copper  
oxide (CuO2) 12026-36-7, Silver vanadium oxide (Ag2V4O11)  
12031-65-1, Lithium nickel oxide linio2 12039-13-3, Titanium  
sulfide (TiS2) 12057-17-9, Lithium manganese oxide limn2o4  
12068-85-8, Iron sulfide Fes2 12162-79-7, Lithium manganese oxide  
limno2 12190-79-3, Cobalt lithium oxide colio2 12597-68-1,  
Stainless steel, uses 12789-09-2, Copper vanadium oxide  
13478-41-6, Copper fluoride Cuf 14024-11-4, Lithium  
tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate  
14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium  
tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate  
20667-12-3, Silver oxide ag2o 21324-40-3, Lithium

hexafluorophosphate 22205-45-4, Copper sulfide  $\text{Cu}_2\text{S}$  29935-35-1,  
 Lithium hexafluoroarsenate 33454-82-9, Lithium triflate  
 35363-40-7, Ethyl propyl carbonate, uses 56525-42-9, Methyl propyl  
 carbonate, uses 90076-65-6 115028-88-1 132404-42-3  
 155645-88-8, Silver oxide  $\text{Ag}_2\text{O}$  181183-66-4, Copper Silver  
 vanadium oxide 195144-63-9, Lithium oxide  $\text{Li}_2\text{O}$  650625-20-0,  
 Silver vanadium oxide ( $\text{Ag}_1.2\text{V}_3\text{O}_{1.8}$ )  
 RL: DEV (Device component use); USES (Uses)  
 (silver vanadium oxide provided with metal oxide coating for  
 cathodes of lithium batteries)

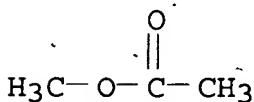
L52 ANSWER 16 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2003:570507 Document No. 139:103814 Cathode active material coated  
 with a metal oxide for incorporation into a lithium battery for an  
 implantable cardiac defibrillator. Leising, Randolph; Takeuchi,  
 Esther S. (USA). U.S. Pat. Appl. Publ. US 2003138697 A1 20030724, 8  
 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-350384  
 20030123. PRIORITY: US 2002-351947P 20020124.

AB An improved cathode material for **nonaq.**  
**electrolyte** lithium electrochem. cell is disclosed. The  
 preferred active material is silver vanadium oxide (SVO) coated with  
 a protective layer of an inert metal oxide ( $\text{MxOy}$ ) or lithiated metal  
 oxide ( $\text{LixMyOz}$ ). The SVO core provides high capacity and rate  
 capability while the protective coating reduces reactivity of the  
 active particles with **electrolyte** to improve the long-term  
 stability of the cathode.

IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
 112-49-2, Triglyme 7791-03-9, Lithium perchlorate  
 14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
 Lithium hexafluorophosphate 33454-82-9, Lithium triflate  
 90076-65-6

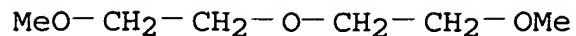
RL: DEV (Device component use); USES (Uses)  
 (cathode active material coated with metal oxide for  
 incorporation into lithium battery for implantable cardiac  
 defibrillator)

RN 79-20-9 HCAPLUS  
 CN Acetic acid, methyl ester (CA INDEX NAME)



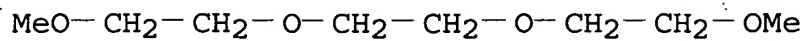
*Formula (1)*

RN 111-96-6 HCAPLUS  
 CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



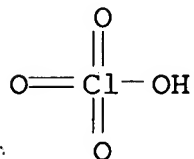
RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7791-03-9 HCAPLUS

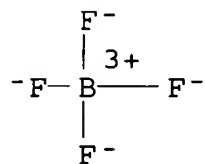
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 14283-07-9 HCAPLUS

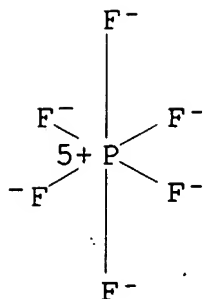
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

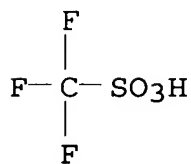
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

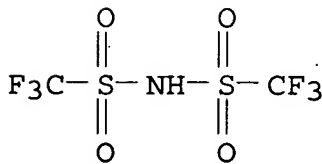
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-48  
 ICS H01M004-50; H01M004-62; B05D005-12; H01M004-58; H01M004-54;  
 H01M004-52; H01M004-66

INCL 429231100; 429231600; 429224000; 429245000; 429232000; 429328000;  
 429329000; 429330000; 429332000; 429333000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 63

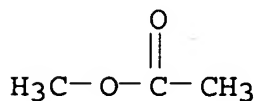
IT 67-68-5, Dms0, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,  
 uses 79-20-9, Methyl acetate 96-48-0,  
 γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,  
 Diethyl carbonate 108-29-2, γ-Valerolactone 108-32-7,  
 Propylene carbonate 109-99-9, Thf, uses 110-71-4,  
 1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2,  
 Triglyme, 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme  
 463-79-6D, Carbonic acid, dialkyl derivs. 556-65-0, Lithium  
 thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl  
 carbonate 623-96-1, Dipropyl carbonate 629-14-1,  
 1,2-Diethoxyethane 872-50-4, n-Methyl-2-pyrrolidone, uses  
 1314-62-1, Vanadia, uses 1317-37-9, Iron sulfide fes 2923-17-3  
 4437-85-8, Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane  
 7784-01-2, Silver chromate ag2cro4 7791-03-9, Lithium  
 perchlorate 11105-02-5, Silver vanadium oxide 12019-06-6, Copper  
 oxide (CuO2) 12031-65-1, Lithium nickel oxide linio2 12039-13-3,  
 Titanium sulfide (TiS2) 12057-17-9, Lithium manganese oxide  
 limn2o4 12057-24-8, Lithia, uses 12162-79-7, Lithium manganese  
 oxide limno2 13478-41-6, Copper fluoride Cuf 14024-11-4, Lithium  
 tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate  
 14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium  
 tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate  
 20667-12-3, Silver oxide ag2o 21324-40-3, Lithium  
 hexafluorophosphate 22205-45-4, Copper sulfide cu2s 25455-73-6,  
 Silver oxide ag2o2 29935-35-1, Lithium hexafluoroarsenate  
 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl  
 carbonate, uses 56525-42-9, Methyl propyl carbonate, uses  
 90076-65-6 115028-88-1 132404-42-3 181183-66-4, Copper  
 Silver vanadium oxide  
 RL: DEV (Device component use); USES (Uses)  
 (cathode active material coated with metal oxide for  
 incorporation into lithium battery for implantable cardiac  
 defibrillator)

L52 ANSWER 17 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2002:736750 Document No. 137:250324 Electrochemical cell having an  
 electrode with a phosphonate additive in the electrode active  
 mixture: Gan, Hong; Takeuchi, Esther S. (USA). U.S. Pat. Appl.  
 Publ. US 2002136956 A1 20020926, 9 pp. (English). CODEN: USXXCO.

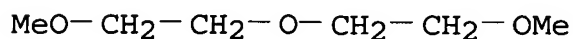


APPLICATION: US 2001-813567 20010321.

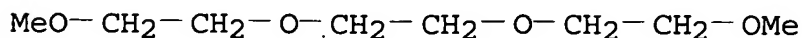
- AB An electrochem. cell of either a primary or a secondary chemical, is disclosed. In either case, the cell has a neg. electrode of lithium or of an anode material which is capable of intercalating and de-intercalating lithium coupled with a pos. electrode of a cathode active material. A phosphonate compound is mixed with either the anode material or the cathode active material prior to contact with its current collector. The resulting electrode couple is activated by a **nonaq. electrolyte**. The **electrolyte** flows into and throughout the electrodes causing the phosphonate additive to dissolve in the **electrolyte**. The phosphonate solute is then able to contact the lithium to provide an elec. insulating and ionically conducting passivation layer thereon.
- IT 79-20-9, Methyl acetate 111-96-6, Diglyme 112-49-2, Triglyme 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6  
 RL: DEV (Device component use); USES (Uses)  
 (electrochem. cell having electrode with phosphonate additive in electrode active mixture)
- RN 79-20-9 HCAPLUS
- CN Acetic acid, methyl ester (CA INDEX NAME)



- RN 111-96-6 HCAPLUS
- CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



- RN 112-49-2 HCAPLUS
- CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

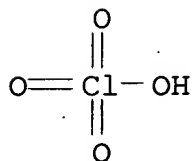


- RN 7439-93-2 HCAPLUS
- CN Lithium (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS

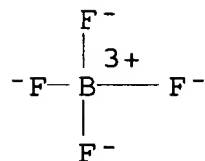
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

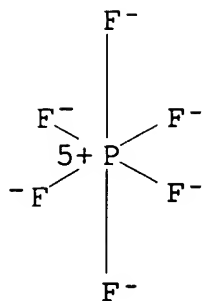
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

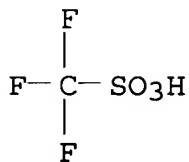
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



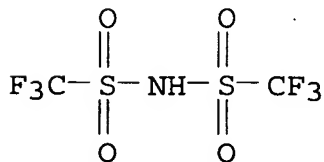
● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-62  
ICS H01M010-44  
INCL 429232000; X42-921.2; X42-921.7; X42-9 5.2  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 63  
IT 67-68-5, Dms0, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,  
uses 79-20-9, Methyl acetate 96-48-0,  
γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,  
Diethyl carbonate 108-20-3, Diisopropyl ether 108-29-2,  
γ-Valerolactone 108-32-7, Propylene carbonate 109-99-9,  
Thf, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6,  
Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide  
143-24-8, Tetraglyme 556-65-0, Lithium thiocyanate 616-38-6,  
Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1,  
Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 872-50-4,  
n-Methylpyrrolidone, uses 1313-13-9, Manganese dioxide, uses  
1313-99-1, Nickel oxide nio, uses 1332-37-2, Iron oxide, uses  
1344-70-3, Copper oxide 2923-17-3 2923-20-8 4437-85-8,  
Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane  
7439-93-2, Lithium, uses 7790-69-4, Lithium nitrate  
7791-03-9, Lithium perchlorate 11098-99-0, Molybdenum  
oxide 11099-11-9, Vanadium oxide 11104-61-3, Cobalt oxide  
11105-02-5, Silver vanadium oxide 11113-75-0, Nickel sulfide  
11115-76-7, Cobalt selenide 11115-77-8, Cobalt telluride  
11115-78-9, Copper sulfide 11115-99-4, Nickel selenide  
11116-00-0, Nickel telluride 11118-57-3, Chromium oxide  
11126-12-8, Iron sulfide 11129-60-5, Manganese oxide 11130-24-8,  
Vanadium sulfide 12026-36-7, Silver vanadium oxide AgV2O5.5  
12039-13-3, Titanium sulfide (TiS2) 12068-85-8, Iron disulfide  
12612-50-9, Molybdenum sulfide 12623-97-1, Chromium sulfide  
12627-00-8, Niobium oxide 12653-56-4, Cobalt sulfide 12673-92-6,  
Titanium sulfide 12687-82-0, Manganese sulfide 12789-09-2,  
Copper vanadium oxide 12795-09-4, Copper telluride 12798-95-7  
13453-75-3, Lithium fluorosulfonate 13463-67-7, Titanium oxide,  
uses 14024-11-4, Lithium tetrachloroaluminate 14283-07-9  
, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate  
15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium  
hexafluoroantimonate 21324-40-3, Lithium  
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl  
carbonate, uses 37320-90-4, Manganese selenide 37359-15-2,  
Copper selenide 39290-91-0, Niobium sulfide 39361-71-2, Titanium  
telluride 50808-87-2, Molybdenum telluride 50814-22-7, Chromium  
telluride 50926-12-0, Iron selenide 50926-13-1, Iron telluride  
54183-54-9, Molybdenum selenide 54427-25-7, Vanadium telluride  
56525-42-9, Methyl propyl carbonate, uses 58319-81-6, Manganese

telluride 64176-75-6, Niobium selenide 66675-50-1, Titanium selenide 66675-60-3, Chromium selenide 90076-65-6  
 115028-88-1 132404-42-3 135751-98-3, Vanadium selenide  
 162124-03-0, Niobium telluride 173478-95-0, Silver vanadium oxide  
 Ag0.35V2O5.18 181183-66-4, Copper Silver vanadium oxide  
 346712-58-1, Silver vanadium oxide Ag0.8V2O5.4  
 RL: DEV (Device component use); USES (Uses)  
 (electrochem. cell having electrode with phosphonate additive in electrode active mixture)

L52 ANSWER 18 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2002:736748 Document No. 137:250323 Electrochemical cell having an electrode with a nitrate additive in the electrode active mixture. Gan, Hong; Takeuchi, Esther S. (USA). U.S. Pat. Appl. Publ. US 2002136950 A1 20020926, 8 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-813569 20010321.

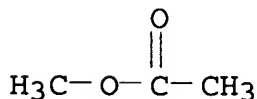
AB An electrochem. cell of either a primary or a secondary chemical, is disclosed. In either case, the cell has a neg. electrode of lithium or of an anode material which is capable of intercalating and de-intercalating lithium coupled with a pos. electrode of a cathode active material. A nitrate compound is mixed with either the anode material or the cathode active material prior to contact with its current collector. The resulting electrode couple is activated by a **nonaq. electrolyte**. The **electrolyte** flows into and throughout the electrodes causing the nitrate additive to dissolve in the **electrolyte**. The nitrate solute is then able to contact the lithium to provide an elec. insulating and ionically conducting passivation layer thereon.

IT 79-20-9, Methyl acetate 111-96-6, Diglyme 112-49-2, Triglyme 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6

RL: DEV (Device component use); USES (Uses)  
 (electrochem. cell having electrode with nitrate additive in electrode active mixture)

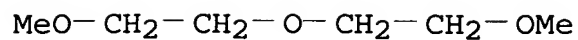
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



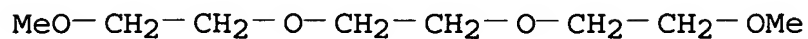
RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



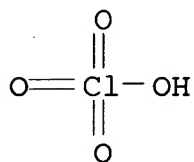
RN 7439-93-2 HCAPLUS

CN Lithium (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS

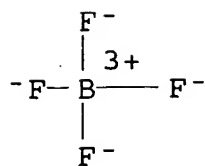
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

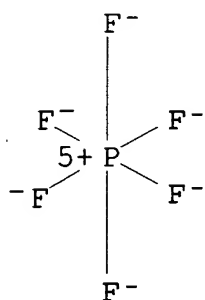
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

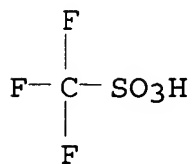
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

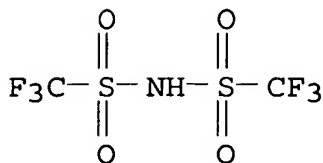
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-62

ICS H01M010-44

INCL 429212000; X42-9 5.2; X42-921.7; X42-923.2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 63

IT 67-68-5, DmsO, uses 75-05-8, Acetonitrile, uses 79-20-9,  
Methyl acetate 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene  
carbonate 105-58-8, Diethyl carbonate 108-20-3, Diisopropyl  
ether 108-29-2,  $\gamma$ -Valerolactone 108-32-7, Propylene  
carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane  
111-96-6, Diglyme 112-49-2, Triglyme 143-24-8,  
Tetraglyme 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl  
carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl  
carbonate 629-14-1, 1,2-Diethoxyethane 872-50-4,  
n-Methylpyrrolidone, uses 1313-13-9, Manganese dioxide, uses  
1313-99-1, Nickel oxide (NiO), uses 1332-37-2, Iron oxide, uses  
1344-70-3, Copper oxide 2923-17-3 2923-20-8 4437-85-8,  
Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane  
7439-93-2, Lithium, uses 7790-69-4, Lithium nitrate  
7791-03-9, Lithium perchlorate 11098-99-0, Molybdenum  
oxide 11099-11-9, Vanadium oxide 11104-61-3, Cobalt oxide  
11105-02-5, Silver vanadium oxide 11113-75-0, Nickel sulfide  
11115-76-7, Cobalt selenide 11115-77-8, Cobalt telluride  
11115-78-9, Copper sulfide 11115-99-4, Nickel selenide  
11116-00-0, Nickel telluride 11118-57-3, Chromium oxide  
11126-12-8, Iron sulfide 11129-60-5, Manganese oxide 11130-24-8,  
Vanadium sulfide 12026-36-7, Silver vanadium oxide AgV2O5.5  
12039-13-3, Titanium sulfide (TiS<sub>2</sub>) 12068-85-8, Iron disulfide  
12612-50-9, Molybdenum sulfide 12623-97-1, Chromium sulfide  
12627-00-8, Niobium oxide 12653-56-4, Cobalt sulfide 12673-92-6,



Titanium sulfide 12687-82-0, Manganese sulfide 12789-09-2,  
 Copper vanadium oxide 12795-09-4, Copper telluride 12798-95-7  
 13453-75-3, Lithium fluorosulfate 13463-67-7, Titanium oxide, uses  
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9,  
 Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate  
 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium  
 hexafluoroantimonate 21324-40-3, Lithium  
 hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl  
 carbonate, uses 37320-90-4, Manganese selenide 37359-15-2,  
 Copper selenide 39290-91-0, Niobium sulfide 39361-71-2, Titanium  
 telluride 50808-87-2, Molybdenum telluride 50814-22-7, Chromium  
 telluride 50926-12-0, Iron selenide 50926-13-1, Iron telluride  
 51311-17-2, Carbon fluoride 54183-54-9, Molybdenum selenide  
 54427-25-7, Vanadium telluride 56525-42-9, Methyl propyl  
 carbonate, uses 58319-81-6, Manganese telluride 64176-75-6,  
 Niobium selenide 66675-50-1, Titanium selenide 66675-60-3,  
 Chromium selenide 90076-65-6 115028-88-1 132404-42-3  
 162124-03-0, Niobium telluride 173478-95-0, Silver vanadium oxide  
 Ag<sub>0.35</sub>V<sub>2</sub>O<sub>5</sub> 181183-66-4, Copper Silver vanadium oxide  
 346712-58-1, Silver vanadium oxide Ag<sub>0.8</sub>V<sub>2</sub>O<sub>5</sub> 4

RL: DEV (Device component use); USES (Uses)

(electrochem. cell having electrode with nitrate additive in  
 electrode active mixture)

L52 ANSWER 19 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2002:540172 Document No. 137:111688 Electrochemical cell having an  
 electrode with a nitrite additive in the electrode active mixture.  
 Gan, Hong; Takeuchi, Esther S. (USA). U.S. Pat. Appl. Publ. US  
 2002094480 A1 20020718, 8 pp. (English). CODEN: USXXCO.  
 APPLICATION: US 2001-765266 20010118.

AB Electrode-active materials for primary or secondary lithium  
 batteries are fabricated in a method that includes mixing the active  
 electrode material with a nitrite ester prior to contact of the  
 active material with its current collector. The resulting electrode  
 couple is activated by a **non-aqueous electrolyte** (especially containing **Li salts**) which  
 dissolves the nitrite ester. The unsatd. nitrite ester has the  
 general structure (RO)N(:O), in which R is C1-10-saturated hydrocarbyl  
 or heteroatom group, or C2-10-unsatd. hydrocarbyl or heteroatom  
 group. Suitable nitrite esters include Me nitrite, Et nitrite, Pr  
 nitrite, iso-Pr nitrite, Bu nitrite, tert-Bu nitrite, iso-Bu  
 nitrite, benzyl nitrite, and Ph nitrite. The nitrite ester is  
 present in the anode and cathode active materials at a 0.05-5.0 weight%  
 level.

IT 7439-93-2, Lithium, uses

RL: CPS (Chemical process); DEV (Device component use); PEP

(Physical, engineering or chemical process); PROC (Process); USES (Uses)

(battery anode; electrode-active materials for primary or secondary lithium batteries containing unsatd. nitrite ester additives)

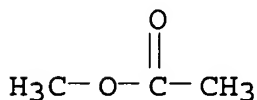
RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

Li

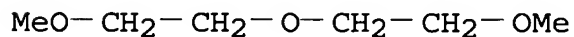
IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
112-49-2, Triglyme 7791-03-9, Lithium perchlorate  
14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
Lithium hexafluorophosphate 33454-82-9, Lithium  
trifluoromethanesulfonate 90076-65-6, Methanesulfonamide,  
1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, **lithium  
salt**

RL: DEV (Device component use); USES (Uses)  
(**nonaq.** battery **electrolytes** containing;  
electrode-active materials for primary or secondary lithium  
batteries containing unsatd. nitrite ester additives)

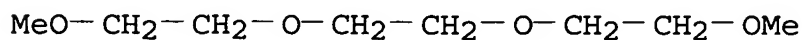
RN 79-20-9 HCAPLUS  
CN Acetic acid, methyl ester (CA INDEX NAME)



RN 111-96-6 HCAPLUS  
CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)

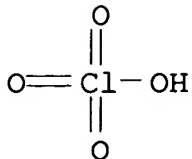


RN 112-49-2 HCAPLUS  
CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7791-03-9 HCAPLUS

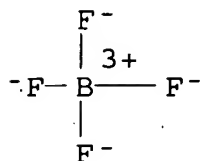
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 14283-07-9 HCAPLUS

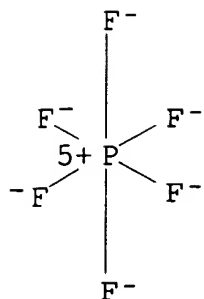
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

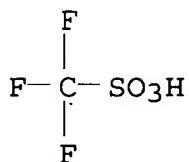
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

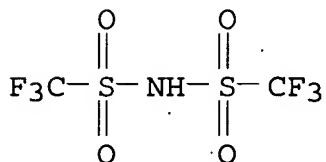
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-62  
ICS H01M004-54; H01M004-52; H01M004-58; H01M004-50; H01M004-40;  
H01M010-40

INCL 429212000; X42-921.9; X42-923.2; X42-923.15; X42-922.4; X42-922.3;  
X42-922.1; X42-922.0; X42-921.7; X42-934.1

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrode unsatd nitrite ester additive; cathode anode  
battery unsatd nitrite ester additive; **electrolyte**  
**nonaq** lithium battery nitrite ester additive

IT Lactams  
Lactones  
RL: DEV (Device component use); USES (Uses)  
(**nonaq.** battery **electrolytes** containing;  
electrode-active materials for primary or secondary lithium  
batteries containing unsatd. nitrite ester additives)

IT Battery **electrolytes**  
(**nonaq.**; electrode-active materials for primary or  
secondary lithium batteries containing unsatd. nitrite ester  
additives)

IT 7439-93-2, Lithium, uses 72785-69-4  
RL: CPS (Chemical process); DEV (Device component use); PEP  
(Physical, engineering or chemical process); PROC (Process); USES  
(Uses)  
(battery anode; electrode-active materials for primary or  
secondary lithium batteries containing unsatd. nitrite ester  
additives)

IT 109-95-5, Ethyl nitrite 540-80-7, tert-Butyl nitrite 541-42-4,  
Isopropyl nitrite 542-56-3, Isobutyl nitrite 543-67-9, Propyl  
nitrite 544-16-1, Butyl nitrite 624-91-9, Methyl nitrite  
935-05-7, Benzyl nitrite 7782-77-6D, Nitrous acid, esters  
34207-39-1, Nitrous acid, phenyl ester  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(**nonaq.** battery **electrolyte** containing;  
electrode-active materials for primary or secondary lithium  
batteries containing unsatd. nitrite ester additives)

IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Dimethyl formamide,  
uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate  
96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
105-58-8, Diethyl carbonate 108-20-3, Diisopropyl ether  
108-29-2,  $\gamma$ -Valerolactone 108-32-7, Propylene carbonate  
109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane  
111-96-6, Diglyme 112-49-2, Triglyme 127-19-5,  
Dimethyl acetamide 143-24-8, Tetraglyme 463-79-6D, Carbonic  
acid, dialkyl esters 556-65-0, Lithium thiocyanate 616-38-6,  
Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1,

Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 872-50-4, N-Methylpyrrolidone, uses 2923-17-3, Lithium trifluoroacetate 2923-20-8, Ethanesulfonic acid, pentafluoro-, **lithium salt** 4437-85-8, Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane 7790-69-4, Lithium nitrate **7791-03-9**, Lithium perchlorate 13453-75-3, Lithium fluorosulfonate 14024-11-4, Lithium tetrachloroaluminate **14283-07-9**, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate **21324-40-3**, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 30215-10-2, Lithium benzenesulfonate **33454-82-9**, Lithium trifluoromethanesulfonate 35363-40-7, Ethyl propyl carbonate, uses 56525-42-9, Methyl propyl carbonate, uses **90076-65-6**, Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, **lithium salt** 132404-42-3, Methane, tris[(trifluoromethyl)sulfonyl]-, **ion(1-), lithium**  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. battery electrolytes containing; electrode-active materials for primary or secondary lithium batteries containing unsatd. nitrite ester additives)

L52 ANSWER 20 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2002:540171 Document No. 137:111687 Electrode-active materials for primary or secondary lithium batteries containing unsaturated phosphate ester additives. Gan, Hong; Takeuchi, Esther S. (USA). U.S. Pat. Appl. Publ. US 2002094479 A1 20020718, 8 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-761626 20010117.

AB Electrode-active materials for primary or secondary lithium batteries are fabricated in a method that includes mixing the active electrode material with an unsatd. phosphate ester prior to contact of the active material with its current collector. The resulting electrode couple is activated by a **non-aqueous electrolyte** (especially containing **Li salts**) which dissolves the phosphate ester. The unsatd. phosphate ester has the general structure (R1)P(:O)(OR2)(OR3), in which at least one of the R groups is H (but not all 3) and at least one of the R groups is a C $\geq$ 3-unsatd. group. Suitable phosphate esters include monobenzyl phosphate, benzyl phosphate, benzyl di-Me phosphate, allyl di-Me phosphate, cyanomethyl di-Me phosphate, etc.

IT **7439-93-2**, Lithium, uses

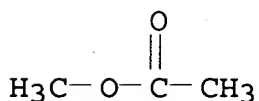
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(battery anode; electrode-active materials for primary or secondary lithium batteries containing unsatd. phosphate ester additives)

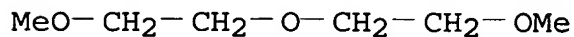
RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

Li

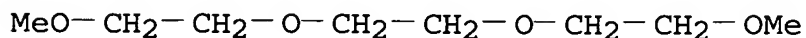
IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
 112-49-2, Triglyme 7791-03-9, Lithium perchlorate  
 14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
 Lithium hexafluorophosphate 33454-82-9, Lithium  
 trifluoromethanesulfonate 90076-65-6, Methanesulfonamide,  
 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, **lithium  
 salt**  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. battery **electrolytes** containing;  
 electrode-active materials for primary or secondary lithium  
 batteries containing unsatd. phosphate ester additives)  
 RN 79-20-9 HCAPLUS  
 CN Acetic acid, methyl ester (CA INDEX NAME)



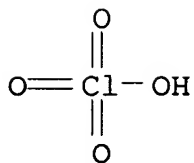
RN 111-96-6 HCAPLUS  
 CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS  
 CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



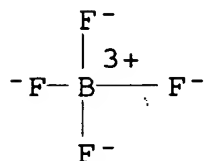
RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 14283-07-9 HCAPLUS

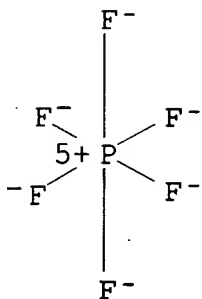
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

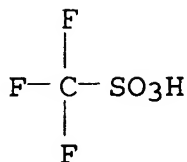
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

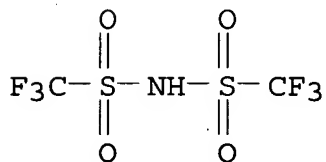


RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-62  
 ICS H01M010-40; H01M004-54  
 INCL 429212000; X42-923.2; X42-921.7; X42-934.2; X42-934.1; X42-933.0;  
 X42-933.2; X42-921.9; X42-923.15; X42-9 5.2  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery electrode unsatd phosphate ester additive; cathode anode  
 battery unsatd phosphate ester additive; **electrolyte**  
**nonaq** lithium battery phosphate ester additive  
 IT Lactams  
 Lactones  
 RL: DEV (Device component use); USES (Uses)  
 (**nonaq**. battery **electrolytes** containing;  
 electrode-active materials for primary or secondary lithium  
 batteries containing unsatd. phosphate ester additives)  
 IT Battery **electrolytes**

(**nonaq.**; electrode-active materials for primary or secondary lithium batteries containing unsatd. phosphate ester additives)

IT 7439-93-2, Lithium, uses 72785-69-4

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(battery anode; electrode-active materials for primary or secondary lithium batteries containing unsatd. phosphate ester additives)

IT 1623-07-0, Benzyl phosphate 1623-10-5, Diallyl methyl phosphate 1623-19-4, Triallyl phosphate 1707-92-2, Tribenzyl phosphate 1779-34-6, Tripropargyl phosphate 7664-38-2D, Phosphoric acid, unsatd. esters 7748-09-6, Diallyl phosphate 55343-62-9, Propargyl phosphate 56379-74-9, Phosphoric acid, dimethyl 2-propynyl ester 67293-73-6, Phosphoric acid, dimethyl phenylmethyl ester 142804-89-5, Phosphoric acid, phenylmethyl ester 433979-69-2, Phosphoric acid, dimethyl nitromethyl ester 433979-70-5, 2-Propyn-1-ol, hydrogen phosphate 433979-71-6, Phosphoric acid, cyanomethyl dimethyl ester 433979-72-7, Phosphoric acid, bis(cyanomethyl) methyl ester

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(**nonaq.** battery **electrolyte** containing; electrode-active materials for primary or secondary lithium batteries containing unsatd. phosphate ester additives)

IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Dimethyl formamide, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-20-3, Diisopropyl ether 108-29-2,  $\gamma$ -Valerolactone 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme 463-79-6D, Carbonic acid, dialkyl esters 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 872-50-4, uses 2923-17-3, Lithium trifluoroacetate 2923-20-8, Ethanesulfonic acid, pentafluoro-, **lithium salt** 4437-85-8, Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane 7790-69-4, Lithium nitrate 7791-03-9, Lithium perchlorate 13453-75-3, Lithium fluorosulfonate 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 30215-10-2, Lithium benzenesulfonate

33454-82-9, Lithium trifluoromethanesulfonate 35363-40-7,  
Ethyl propyl carbonate, uses 56525-42-9, Methyl propyl carbonate,  
uses 90076-65-6, Methanesulfonamide, 1,1,1-trifluoro-N-  
[(trifluoromethyl)sulfonyl]-, lithium salt  
132404-42-3, Methane, tris[(trifluoromethyl)sulfonyl]-, ion  
(1-), lithium

RL: DEV (Device component use); USES (Uses)  
(nonaq. battery electrolytes containing;  
electrode-active materials for primary or secondary lithium  
batteries containing unsatd. phosphate ester additives)

L52 ANSWER 21 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2001:932822 Document No. 136:72254 **Nonaqueous**  
**electrolyte** secondary battery. Noma, Katsuya (GS-Melcotec  
Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001357889 A  
20011226, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
2000-179749 20000615.

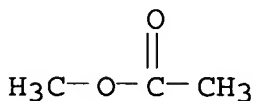
AB The title battery has good security, high energy d., and miniaturized  
size. The battery has an electricity generation element consisting  
of a anode plate, a cathode plate, and a separator between the 2  
electrodes. The element is packed in a single cell case with the  
case outside elec. terminals connected with the element electrodes.  
The inner surface of the case is coated with an insulator. The  
battery is suited for portable electronic devices.

IT 79-20-9, Methyl acetate 646-06-0, Dioxolane  
7791-03-9 14283-07-9 21324-40-3  
33454-82-9 90076-65-6

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary battery)

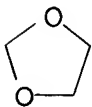
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)

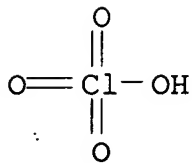


RN 646-06-0 HCAPLUS

CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)

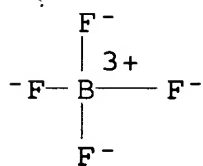


RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



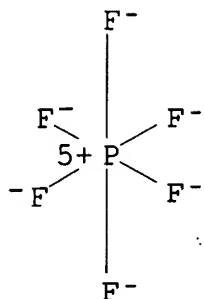
● Li

RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



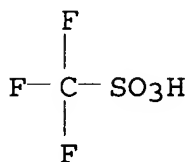
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



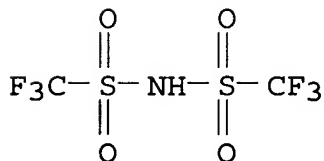
● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40  
ICS H01M002-06; H01M002-26

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76

ST **nonaq electrolyte** secondary battery

IT Electric apparatus  
Secondary batteries  
(**nonaq. electrolyte** secondary battery)

IT Polycarbonates, uses  
Polyimides, uses  
Polyoxyphenylenes  
Polysulfones, uses  
RL: DEV (Device component use); USES (Uses)  
(**nonaq. electrolyte** secondary battery)

IT Polymers, uses  
RL: DEV (Device component use); USES (Uses)  
(thermal plastic; **nonaq. electrolyte** secondary battery)

IT Aluminum alloy, base  
RL: AMX (Analytical matrix); ANST (Analytical study)  
(**nonaq. electrolyte** secondary battery)

IT 67-68-5, Dimethylsulfoxide, uses 68-12-2, Dimethylform amide, uses  
75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate  
96-47-9, 2-Methyltetrahydrofuran 96-48-0,  $\gamma$ -Butyrolactone  
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses  
110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 127-19-5,  
Dimethylacetamide 616-38-6, Dimethyl carbonate 629-14-1,  
1,2-Diethoxyethane 646-06-0, Dioxolane 872-50-4,  
N-Methylpyrrolidone, uses 1313-13-9, Manganese dioxide, uses  
1313-27-5, Molybdenum oxide, uses 1314-35-8, Tungsten oxide, uses  
1314-62-1, Vanadium oxide (V2O5), uses 2923-17-3 7429-90-5,  
Aluminum, uses 7439-92-1, Lead, uses 7440-21-3, Silicon, uses  
7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-43-9,  
Cadmium, uses 7440-44-0, Carbon, uses 7440-66-6, Zinc, uses  
7782-42-5, Graphite, uses 7791-03-9 9002-88-4,  
Polyethylene 9003-07-0, Polypropylene 12031-65-1, Lithium nickel  
oxide (LiNiO2) 12037-42-2, Vanadium oxide (V6O13) 12039-13-3,  
Titanium disulfide 12057-17-9, Lithium manganese oxide (LiMn2O4)  
12190-79-3, Cobalt lithium oxide (CoLiO2) 12411-15-3, Iron dioxide  
13463-67-7, Titania, uses **14283-07-9 21324-40-3**  
26352-99-8, Polypropylene phthalate 29935-35-1 **33454-82-9**  
90076-63-4 **90076-65-6** 115833-64-2, Iron lithium oxide  
(Fe2LiO3) 132843-42-6 166187-76-4, Lithium manganese oxide  
(Li2Mn2O4)  
RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte secondary battery)

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2001:796403 Document No. 135:346864 Cathode for **nonaqueous electrolyte lithium ion** battery.

Yamada, Atsuo; Yamahira, Takayuki (Sony Corporation, Japan). Eur. Pat. Appl. EP 1150368 A2 20011031, 26 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-109919 20010424. PRIORITY: JP 2000-128998 20000425.

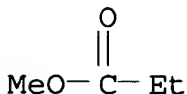
AB The **lithium ion** cell is improved appreciably in operational stability under special conditions, such as high temps., and exhibits superior characteristics against over-discharging, while guaranteeing compatibility to the operating voltage of a conventional **lithium ion** cell and an energy d. equivalent to that of the conventional **lithium ion** cell. To this end, the **lithium ion** cell includes a pos. electrode, a neg. electrode and a **nonaq. electrolyte**, and uses, as a pos. electrode active material, a composite material of a first lithium compound represented by the general formula  $\text{Li}_x\text{M}_y\text{PO}_4$ , where  $0 < x < 2$ ,  $0.8 < y < 1.2$  and M contains Fe, and a second lithium compound having a potential holder than the potential of the first lithium compound

IT 554-12-1, Methyl propionate 623-42-7, Methyl butyrate 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6

RL: DEV (Device component use); USES (Uses)  
(cathode for **nonaq. electrolyte lithium ion** battery)

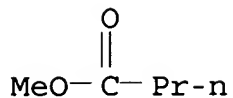
RN 554-12-1 HCAPLUS

CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)

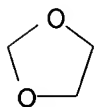


RN 623-42-7 HCAPLUS

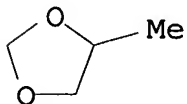
CN Butanoic acid, methyl ester (9CI) (CA INDEX NAME)



RN 646-06-0 HCAPLUS  
 CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



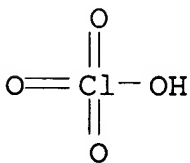
RN 1072-47-5 HCAPLUS  
 CN 1,3-Dioxolane, 4-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

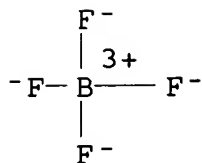


● Li

RN 14283-07-9 HCAPLUS



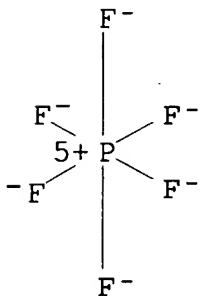
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

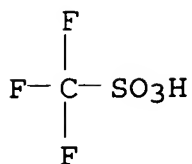
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

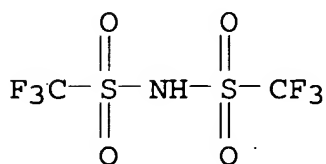
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
 lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-58  
 ICS C01G049-00; C01B025-30; C01B025-45; H01M004-38  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium **nonaq electrolyte** cathode  
 IT Charcoal  
 RL: DEV (Device component use); USES (Uses)  
 (activated; cathode for **nonaq. electrolyte**  
**lithium ion** battery)  
 IT Battery cathodes  
 (cathode for **nonaq. electrolyte**  
**lithium ion** battery)  
 IT Carbon fibers, uses  
 Carbonaceous materials (technological products)  
 Coke  
 Petroléum coke  
 RL: DEV (Device component use); USES (Uses)  
 (cathode for **nonaq. electrolyte**  
**lithium ion** battery)  
 IT Carbon black, uses

RL: MOA (Modifier or additive use); USES (Uses)  
 (cathode for **nonaq. electrolyte lithium ion** battery)

IT Fluoropolymers, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (cathode for **nonaq. electrolyte lithium ion** battery)

IT Organic compounds, uses  
 RL: DEV (Device component use); USES (Uses)  
 (high mol., sintered; cathode for **nonaq. electrolyte lithium ion** battery)

IT Secondary batteries  
 (lithium; cathode for **nonaq. electrolyte lithium ion** battery)

IT Coke  
 RL: DEV (Device component use); USES (Uses)  
 (needle; cathode for **nonaq. electrolyte lithium ion** battery)

IT Coke  
 RL: DEV (Device component use); USES (Uses)  
 (pitch; cathode for **nonaq. electrolyte lithium ion** battery)

IT Furan resins  
 Phenolic resins, uses  
 RL: DEV (Device component use); USES (Uses)  
 (sintered and carbonized; cathode for **nonaq. electrolyte lithium ion** battery)

IT 50-21-5D, Lactic acid, ester 60-29-7, Diethyl ether, uses  
 64-19-7D, Acetic acid, ester, uses 75-05-8, Acetonitrile, uses  
 79-09-4D, Propionic acid, ester 96-47-9, 2-Methyltetrahydrofuran  
 96-48-0 96-49-1, Ethylene carbonate 100-66-3, Anisole, uses  
 105-58-8, Diethyl carbonate 107-12-0, Propionitrile 108-32-7,  
 Propylene carbonate 109-99-9, Thf, uses 110-71-4,  
 1,2-Dimethoxyethane 126-33-0, Sulfolane 409-21-2, Silicon  
 carbide sic, uses 554-12-1, Methyl propionate 616-38-6,  
 Dimethyl carbonate 623-42-7, Methyl butyrate 623-96-1,  
 Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0  
 , 1,3-Dioxolane 872-36-6, Vinylene carbonate 1072-47-5,  
 4-Methyl-1,3-dioxolane 1313-08-2 2550-62-1, Lithium  
 methanesulfonate 4437-85-8, Butylene carbonate 7439-93-2  
 , Lithium, uses 7440-50-8, Copper, uses 7447-41-8, Lithium  
 chloride, uses 7550-35-8, Lithium bromide 7782-42-5, Graphite,  
 uses 7791-03-9, Lithium perchlorate 9003-07-0,  
 Polypropylene 12007-81-7, Silicon tetraboride 12008-29-6,  
 Silicon hexaboride 12013-56-8, Calcium disilicide 12017-12-8,  
 Cobalt disilicide 12018-09-6, Chromium disilicide 12022-99-0,  
 Iron disilicide 12032-86-9, Manganese disilicide 12033-76-0,

Silicon nitride oxide  $\text{Si}_2\text{N}_2\text{O}$  12033-89-5, Silicon nitride, uses 12034-80-9, Niobium disilicide 12039-79-1, Tantalum disilicide 12039-83-7, Titanium silicide  $\text{TiSi}_2$  12039-87-1, Vanadium disilicide 12039-88-2, Tungsten disilicide 12059-14-2, Nickel silicide ( $\text{Ni}_2\text{Si}$ ) 12136-78-6, Molybdenum disilicide 12159-07-8, Copper silicide  $\text{Cu}_5\text{Si}$  12190-79-3, Cobalt lithium oxide  $\text{CoLiO}_2$  12201-89-7, Nickel disilicide 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15365-14-7, Iron lithium phosphate  $\text{FeLiPO}_4$  19414-36-9, Iron lithium manganese phosphate ( $(\text{Fe}, \text{Mn})\text{Li}(\text{PO}_4)$ ) 21324-40-3, Lithium hexafluorophosphate 22831-39-6, Magnesium silicide ( $\text{Mg}_2\text{Si}$ ) 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 35678-71-8, Methylsulfolane 90076-65-6 113066-89-0, Cobalt lithium nickel oxide  $\text{Co}_0.2\text{LiNi}_0.8\text{O}_2$  113671-38-8, Silicon oxide  $\text{SiO}_2$  160479-36-7, Lithium tin oxide 178958-56-0, Lithium silicon oxide 300858-61-1 339333-78-7, Zinc silicide  $\text{ZnSi}_2$  371148-86-6, Tin oxide ( $\text{SnO}_2$ ) 371148-87-7, Lithium magnesium manganese oxide ( $\text{LiMg}_0.2\text{Mn}_0.8\text{O}_2$ )  
 RL: DEV (Device component use); USES (Uses)

(cathode for **nonaq. electrolyte**  
**lithium ion** battery)

IT 24937-79-9, PvdF

RL: TEM (Technical or engineered material use); USES (Uses)  
 (cathode for **nonaq. electrolyte**  
**lithium ion** battery)

IT 7440-44-0, Carbon, uses

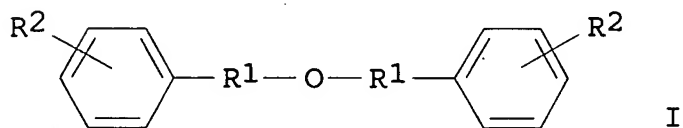
RL: DEV (Device component use); USES (Uses)  
 (pyrocarbon; cathode for **nonaq. electrolyte**  
**lithium ion** battery)

L52 ANSWER 23 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

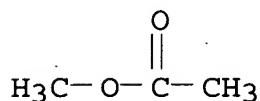
2001:595615 Document No. 135:183252 Secondary lithium battery with **nonaqueous electrolyte** containing aromatic ether.

Shin, Jung Soon; Kim, Jin Sung; Hong, Ee Sun; Lee, Jong Wook; Kim, Young Kyu; Kim, Jong Bo (Samsung SDI Co., Ltd., S. Korea; Cheil Hapsum Corp.). Jpn. Kokai Tokkyo Koho JP 2001223023 A 20010817, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-8949 20010117. PRIORITY: KR 2000-3394 20000125.

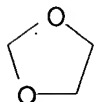
GI



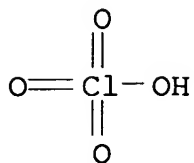
- AB The battery is equipped with a cathode containing Li mixed oxide, an anode containing Li, a Li alloy, or a carbonaceous material, and an **electrolyte** containing an **nonaq.** organic solvent, a **Li salt**, and an aromatic ether I (R1 = single bond or C≤2 alkylene; R2 = H or C≤2 alkyl) which dimerizes or polymerizes at temperature and voltage higher than predetd. value. The battery has good storage stability at high temperature after charging, reliability, and safety.
- IT 79-20-9, Methyl acetate 646-06-0, 1,3-Dioxolane  
 RL: DEV (Device component use); USES (Uses)  
 (**electrolyte** solvent; **nonaq.**  
**electrolyte** containing dimerizable or polymerizable aromatic  
 ether for lithium battery)
- RN 79-20-9 HCAPLUS
- CN Acetic acid, methyl ester (CA INDEX NAME)



- RN 646-06-0 HCAPLUS
- CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



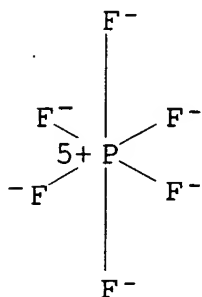
- IT 7791-03-9, Lithium perchlorate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethylsulfonyl)amide  
 RL: DEV (Device component use); USES (Uses)  
 (**electrolyte**; **nonaq. electrolyte**  
 containing dimerizable or polymerizable aromatic ether for lithium  
 battery)
- RN 7791-03-9 HCAPLUS
- CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 21324-40-3 HCAPLUS

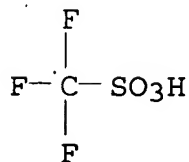
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

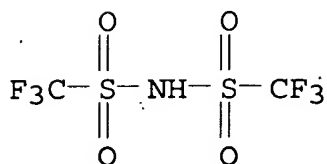
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
 lithium salt (9CI) (CA INDEX NAME)

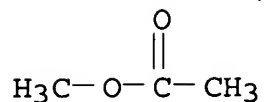


● Li

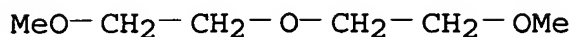
IC H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium battery **electrolyte** arom ether safety  
 IT Ethers, uses  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (aromatic; **nonaq. electrolyte** containing dimerizable or polymerizable aromatic ether for lithium battery)  
 IT Secondary batteries  
 (lithium; **nonaq. electrolyte** containing dimerizable or polymerizable aromatic ether for lithium battery)  
 IT Battery **electrolytes**  
 Dimerization  
 Polymerization  
 (**nonaq. electrolyte** containing dimerizable or polymerizable aromatic ether for lithium battery)  
 IT 7440-44-0, MCF, uses  
 RL: DEV (Device component use); USES (Uses)  
 (MCF; anode; **nonaq. electrolyte** containing dimerizable or polymerizable aromatic ether for lithium battery)  
 IT 52627-24-4, Cobalt lithium oxide  
 RL: DEV (Device component use); USES (Uses)  
 (cathode; **nonaq. electrolyte** containing dimerizable or polymerizable aromatic ether for lithium battery)  
 IT 67-68-5, Dimethylsulfoxide, uses 79-20-9, Methyl acetate  
 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate  
 109-99-9, Tetrahydrofuran, uses 110-71-4 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 646-06-0,  
 1,3-Dioxolane 24991-55-7, Polyethylene glycol dimethyl ether  
 RL: DEV (Device component use); USES (Uses)

- (**electrolyte** solvent; **nonaq.**  
**electrolyte** containing dimerizable or polymerizable aromatic  
ether for lithium battery)
- IT 7791-03-9, Lithium perchlorate 12007-60-2, Lithium  
tetraborate 21324-40-3, Lithium hexafluorophosphate  
33454-82-9, Lithium trifluoromethanesulfonate  
90076-65-6, Lithium bis(trifluoromethylsulfonyl)amide  
RL: DEV (Device component use); USES (Uses)  
(**electrolyte**; **nonaq. electrolyte**  
containing dimerizable or polymerizable aromatic ether for lithium  
battery)
- IT 101-84-8, Diphenyl ether 103-50-4, Benzyl ether  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(**nonaq. electrolyte** containing dimerizable or  
polymerizable aromatic ether for lithium battery)
- L52 ANSWER 24 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
2001:537410 Document No. 135:109730 Alkali metal electrochemical cell  
activated with a **nonaqueous electrolyte** having a  
sulfate additive. Gan, Hong; Takeuchi, Esther S. (Wilson Greatbatch  
Ltd., USA). U.S. US 6265106 B1 20010724, 13 pp., Cont.-in-part of  
U.S. 6,180,283. (English). CODEN: USXXAM. APPLICATION: US  
2000-491355 20000126. PRIORITY: US 1998-9557 19980120; US  
1999-460035 19991213.
- AB An alkali metal, solid cathode, **nonaq.** electrochem. cell  
capable of delivering high current pulses, rapidly recovering its  
open circuit voltage and having high current capacity, is disclosed.  
The stated benefits are realized by the addition of at least one organic  
sulfate additive to an **electrolyte** comprising an alkali  
metal salt dissolved in a mixture of a low viscosity solvent and a  
high permittivity solvent. A preferred solvent mixture includes  
propylene carbonate, dimethoxyethane and a sulfate additive.
- IT ~~79-20-9, Methyl acetate~~ 111-96-6, Diglyme  
112-49-2, Triglyme 7439-93-2, Lithium,  
uses 7791-03-9, Lithium perchlorate  
14283-07-9, Lithium tetrafluoroborate  
21324-40-3, Lithium hexafluorophosphate  
90076-65-6  
RL: DEV (Device component use); USES (Uses)  
(alkali metal electrochem. cell activated with  
**nonaq. electrolyte** having sulfate additive)
- RN 79-20-9 HCAPLUS  
CN Acetic acid, methyl ester (CA INDEX NAME)

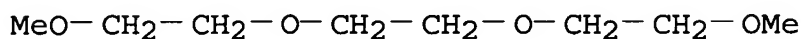




RN 111-96-6 HCAPLUS  
 CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



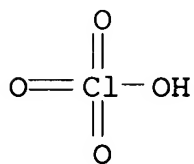
RN 112-49-2 HCAPLUS  
 CN 2,5,8,11-Tetrapoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

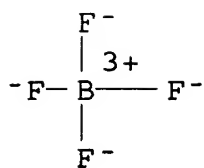
Li

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



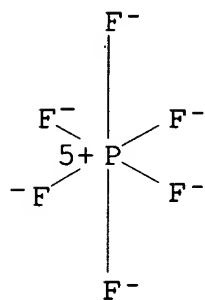
● Li

RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

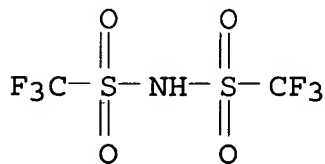
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-60  
 INCL 429215000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery **electrolyte** org sulfate additive  
 IT Battery **electrolytes**  
     (alkali metal electrochem. cell activated with **nonaq.**  
     **electrolyte** having sulfate additive)  
 IT Alkali metal salts  
     Esters, uses  
     Ethers, uses  
     RL: DEV (Device component use); USES (Uses)  
     (alkali metal electrochem. cell activated with **nonaq.**  
     **electrolyte** having sulfate additive)  
 IT Carbon black, uses  
     RL: MOA (Modifier or additive use); USES (Uses)  
     (alkali metal electrochem. cell activated with **nonaq.**  
     **electrolyte** having sulfate additive)  
 IT Fluoropolymers, uses  
     RL: TEM (Technical or engineered material use); USES (Uses)  
     (binder; alkali metal electrochem. cell activated with  
     **nonaq. electrolyte** having sulfate additive)  
 IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,  
     uses 79-20-9, Methyl acetate 96-48-0,  
     γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,  
     Diethyl carbonate 108-20-3, Diisopropyl ether 108-29-2,  
     γ-Valerolactone 108-32-7, Propylene carbonate 109-99-9,  
     Thf, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6,  
     Diglyme 112-49-2, Triglyme 120-94-5, N-Methyl  
     pyrrolidine 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme  
     556-65-0, **Lithium** thiocyanate 616-38-6, Dimethyl  
     carbonate 623-53-0, Ethyl methyl carbonate 629-14-1,  
     1,2-Diethoxyethane 2923-17-3 2923-20-8 4437-85-8, Butylene  
     carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane 7439-93-2,  
     **Lithium**, uses 7791-03-9, **Lithium**  
     perchlorate 11099-11-9, Vanadium oxide 11105-02-5, Silver  
     vanadium oxide 12057-24-8, Lithia, uses 12789-09-2, Copper  
     vanadium oxide 12798-95-7 13453-75-3, **Lithium**  
     fluorosulfate 14024-11-4, **Lithium** tetrachloroaluminate  
     14283-07-9, **Lithium** tetrafluoroborate  
     15955-98-3, **Lithium** tetrachlorogallate 18424-17-4,  
     **Lithium** hexafluoroantimonate 21324-40-3,  
     **Lithium** hexafluorophosphate 29935-35-1, **Lithium**  
     hexafluoroarsenate 35363-40-7, Ethyl propyl carbonate  
     56525-42-9, Methyl propyl carbonate 90076-65-6  
     115028-88-1 132404-42-3 181183-66-4, Copper Silver vanadium  
     oxide

RL: DEV (Device component use); USES (Uses)  
(alkali metal electrochem. cell activated with  
**nonaq. electrolyte** having sulfate additive)

IT 57-52-3, Bis(triethyltin)sulfate 75-93-4, Monomethyl sulfate  
110-92-9, Sulfuric acid, monopentyl ester 540-82-9, Monoethyl  
sulfate 4153-34-8, Bis(trimethyltin)sulfate 7440-44-0, Carbon,  
uses 7782-42-5, Graphite, uses 10218-25-4,  
Bis(tripropyltin)sulfate 10249-85-1, Bis(tributyltin)sulfate  
13425-84-8, Sulfuric acid, monopropyl ester 15507-13-8, Monobutyl  
sulfate 18056-07-0, Bis(triethylsilyl) sulfate 18166-30-8  
18230-79-0 18306-29-1, Bis(trimethylsilyl) sulfate 18495-74-4,  
Dibenzyl sulfate 21706-75-2, Sulfuric acid, monoallyl ester  
26687-85-4, Sulfuric acid, monobenzyl ester 27063-40-7  
57875-67-9 63869-87-4 91695-35-1 191605-42-2 320381-72-4  
320381-73-5 320381-74-6 320381-75-7 320381-79-1 320381-80-4  
320381-81-5 320381-82-6, Bis(tripentyltin)sulfate 320381-83-7  
320381-84-8 320381-85-9 320381-86-0 320381-87-1 343849-76-3  
349607-55-2

RL: MOA (Modifier or additive use); USES (Uses)  
(alkali metal electrochem. cell activated with **nonaq.**  
**electrolyte** having sulfate additive)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6,  
Titanium, uses 12597-68-1, stainless steel, uses

RL: MOA (Modifier or additive use); USES (Uses)  
(powder; alkali metal electrochem. cell activated with  
**nonaq. electrolyte** having sulfate additive)

L52 ANSWER 25 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2001:489871 Document No. 135:79494 Alkali metal battery activated with  
a **nonaqueous electrolyte** having a sulfate  
additive. Gan, Hong; Takeuchi, Esther S. (USA). U.S. Pat. Appl.  
Publ. US 2001006751 A1 20010705, 7 pp., Cont.-in-part of U.S.  
6,180,283. (English). CODEN: USXXCO. APPLICATION: US 2001-772680  
20010130. PRIORITY: US 1999-460035 19991213; US 1998-9557 19980120.

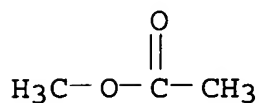
AB An alkali metal, solid cathode, **nonaq.** electrochem. cell  
capable of delivering high current pulses, rapidly recovering its  
open circuit voltage and having high current capacity, is disclosed.  
The stated benefits are realized by the addition of at least one organic  
sulfate additive to an **electrolyte** comprising an alkali  
metal salt dissolved in a mixture of a low viscosity solvent and a  
high permittivity solvent. A preferred solvent mixture includes  
propylene carbonate, 1,2-dimethoxyethane and a sulfate additive  
having at least one unsatd. hydrocarbon containing a C(sp or sp<sup>2</sup>)-C(sp<sup>3</sup>)  
bond unit having the C(sp<sup>3</sup>) carbon directly connected to the -OSO<sub>3</sub>-  
functional group.

IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
112-49-2, Triglyme 7439-93-2, Lithium,

uses 7791-03-9, Lithium perchlorate  
14283-07-9, Lithium tetrafluoroborate  
21324-40-3, Lithium hexafluorophosphate  
33454-82-9, Lithium triflate 90076-65-6  
RL: DEV (Device component use); USES (Uses)  
(alkali metal battery activated with nonaq.  
electrolyte having sulfate additive)

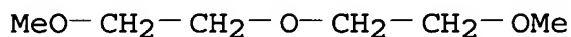
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



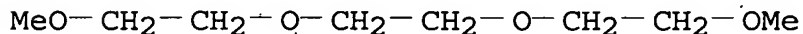
RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



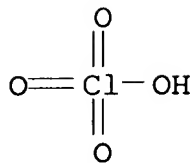
RN 7439-93-2 HCAPLUS

CN Lithium (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS

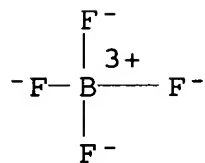
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

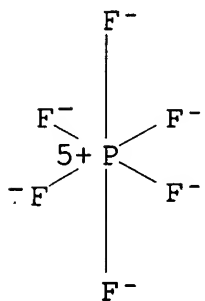
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

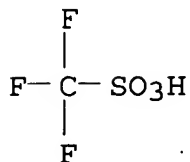
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

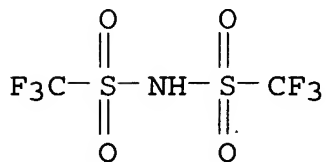
● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40  
 INCL 429340000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery **electrolyte** sulfate additive  
 IT Battery **electrolytes**  
     (alkali metal battery activated with **nonaq.**  
     **electrolyte** having sulfate additive)  
 IT Carbon black, uses  
     Fluoropolymers, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
     (alkali metal battery activated with **nonaq.**  
     **electrolyte** having sulfate additive)  
 IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,  
     uses 79-20-9, Methyl acetate 96-48-0,  
     γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,

Diethyl carbonate 108-20-3, Diisopropyl ether 108-29-2,  
 γ-Valerolactone 108-32-7, Propylene carbonate 109-99-9,  
 Thf, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6,  
 Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide  
 143-24-8, Tetraglyme 556-65-0, **Lithium** thiocyanate  
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate  
 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane  
 872-50-4, uses 2923-17-3 2923-20-8 4437-85-8, Butylene  
 carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane 7439-93-2,  
**Lithium**, uses 7791-03-9, **Lithium**  
 perchlorate 11099-11-9, Vanadium oxide 11105-02-5, Silver  
 vanadium oxide 12057-24-8, Lithia, uses 12789-09-2, Copper  
 vanadium oxide 12798-95-7 13453-75-3, **Lithium**  
 fluorosulfate 14024-11-4, **Lithium** tetrachloroaluminate  
 14283-07-9, **Lithium** tetrafluoroborate  
 14485-20-2, **Lithium** tetraphenylborate 15955-98-3,  
**Lithium** tetrachlorogallate 18424-17-4, **Lithium**  
 hexafluoroantimonate 21324-40-3, **Lithium**  
 hexafluorophosphate 29935-35-1, **Lithium**  
 hexafluoroarsenate 33454-82-9, **Lithium** triflate  
 35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl propyl  
 carbonate 90076-65-6 132404-42-3 135023-75-5,  
**Lithium** phenylsulfate 181183-66-4, Copper silver vanadium  
 oxide

RL: DEV (Device component use); USES (Uses)

(alkali **metal** battery activated with **nonaq.**

**electrolyte** having sulfate additive)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 18495-74-4,  
 Dibenzyl sulfate 27063-40-7 347396-84-3 347396-86-5

RL: MOA (Modifier or additive use); USES (Uses)

(alkali metal battery activated with **nonaq.**

**electrolyte** having sulfate additive)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6,  
 Titanium, uses 12597-68-1, stainless steel, uses

RL: MOA (Modifier or additive use); USES (Uses)

(powder; alkali metal battery activated with **nonaq.**

**electrolyte** having sulfate additive)

L52 ANSWER 26 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2001:356161 Document No. 134:342533 Electrochemical cell containing  
**nonaqueous electrolyte**. Schmidt, Michael;

Kuehner, Andreas; Niemann, Marlies (Merck Patent G.m.b.H., Germany).

Ger. Offen. DE 10042149 A1 20010517, 8 pp. (German). CODEN:

GWXXBX. APPLICATION: DE 2000-10042149 20000826. PRIORITY: DE

1999-19944603 19990917.

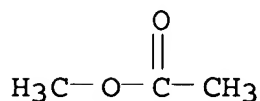
AB A **nonaq. electrolyte** for an electrochem. cell

comprises ≥1 F-containing supporting **electrolyte**, by

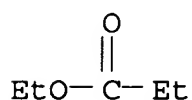


choice  $\geq 1$  organic solvent for the supporting **electrolyte** and  $\geq 1$  organic isocyanate in a quantity effective to lower the water content of the **electrolyte**. An electrochem. cell contains an anode, a cathode, and the above **electrolyte** arranged between them is a **Li ion** battery or a supercapacitor. The **electrolyte** according to invention and the electrochem. cell according to invention possess excellent chemical and electrochem. stability.

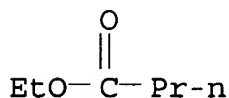
IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 105-54-4, Ethyl butyrate 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 623-42-7, Methyl butyrate 646-06-0, Dioxolane 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6  
 RL: DEV (Device component use); USES (Uses)  
 (electrochem. cell containing **nonaq. electrolyte**)  
 RN 79-20-9 HCAPLUS  
 CN Acetic acid, methyl ester (CA INDEX NAME)



RN 105-37-3 HCAPLUS  
 CN Propanoic acid, ethyl ester (CA INDEX NAME)



RN 105-54-4 HCAPLUS  
 CN Butanoic acid, ethyl ester (CA INDEX NAME)

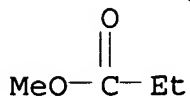


RN 141-78-6 HCAPLUS  
 CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)

Et-O-Ac

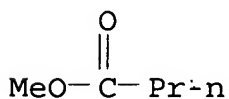
RN 554-12-1 HCAPLUS

CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)



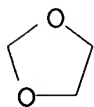
RN 623-42-7 HCAPLUS

CN Butanoic acid, methyl ester (9CI) (CA INDEX NAME)



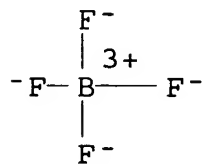
RN 646-06-0 HCAPLUS

CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



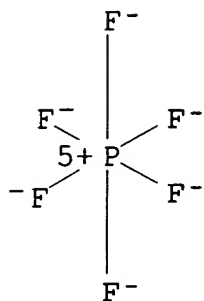
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



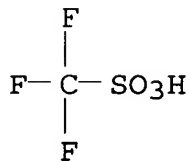
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



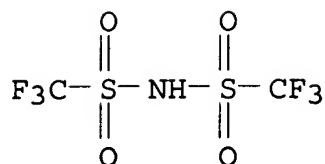
● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

- IC ICM H01M010-40  
ICS H01G009-038
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76
- ST battery **nonaq electrolyte** isocyanate;  
supercapacitor **nonaq electrolyte** isocyanate
- IT Battery **electrolytes**  
(electrochem. cell containing **nonaq. electrolyte**)
- IT Secondary batteries  
(lithium; electrochem. cell containing **nonaq. electrolyte**)
- IT **Electrolytes**  
(**nonaq.**; electrochem. cell containing **nonaq. electrolyte**)
- IT Isocyanates  
RL: DEV (Device component use); USES (Uses)  
(organic; electrochem. cell containing **nonaq. electrolyte**)
- IT Capacitors  
(supercapacitor; electrochem. cell containing **nonaq. electrolyte**)
- IT 67-68-5, DmsO, uses 75-05-8, Acetonitrile, uses 79-20-9,  
Methyl acetate 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene  
carbonate 103-71-9, Phenyl isocyanate, uses 105-37-3,  
Ethyl propionate 105-54-4, Ethyl butyrate 105-58-8,  
Diethyl carbonate 107-13-1, Acrylonitrile, uses 108-32-7,  
Propylene carbonate 126-33-0, Sulfolane 141-78-6, Ethyl  
acetate, uses 554-12-1, Methyl propionate 616-38-6,  
Dimethyl carbonate 623-42-7, Methyl butyrate 623-53-0,  
Ethyl Methyl carbonate 646-06-0, Dioxolane  
14283-07-9, Lithium tetrafluoroborate 17337-13-2,  
2-Biphenylisocyanate 18424-17-4, Lithium hexafluoroantimonate  
21324-40-3, Lithium hexafluorophosphate 27359-20-2, Phenyl  
diisocyanate 29935-35-1, Lithium hexafluoroarsenate  
33454-82-9, Lithium triflate 56525-42-9, Methyl propyl

carbonate 90076-65-6 132404-42-3

RL: DEV (Device component use); USES (Uses)

(electrochem. cell containing **nonaq. electrolyte**)

L52 ANSWER 27 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2001:73421 Document No. 134:103344 Method for reducing voltage delay in an alkali metal electrochemical cell activated with a **nonaqueous electrolyte** having a sulfate additive.

Gan, Hong; Takeuchi, Esther S. (Wilson Greatbatch Ltd., USA). U.S.

US 6180283 B1 20010130, 13 pp., Cont.-in-part of U.S. 6,013,394.

(English). CODEN: USXXAM. APPLICATION: US 1999-460035 19991213.

PRIORITY: US 1998-9557 19980120.

AB An alkali metal, solid cathode, **nonaq. electrochem. cell** capable of delivering high current pulses, rapidly recovering its open circuit voltage and having high current capacity, is disclosed. The stated benefits are realized by the addition of at least one organic sulfate additive to an **electrolyte** comprising an alkali metal salt dissolved in a mixture of a low viscosity solvent and a high permittivity solvent. A preferred solvent mixture includes propylene carbonate, dimethoxyethane and a sulfate additive having at least one unsatd. hydrocarbon containing a C(sp<sup>2</sup> or sp<sup>3</sup>)-C(sp<sup>3</sup>) bond unit having the C(sp<sup>3</sup>) carbon directly connected to the -OSO<sub>3</sub>- functional group, or an silyl sulfate or a tin sulfate.

IT ~~79-20-9, Methyl acetate 111-96-6, Diglyme~~

~~112-49-2, Triglyme 7439-93-2, Lithium, uses~~

~~7791-03-9, Lithium perchlorate 14283-07-9, Lithium~~

~~tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate~~

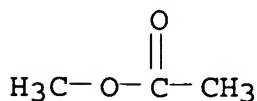
~~33454-82-9, Lithium triflate 90076-65-6~~

RL: DEV (Device component use); USES (Uses)

(method for reducing voltage delay in alkali metal electrochem. cell activated with **nonaq. electrolyte** having sulfate additive)

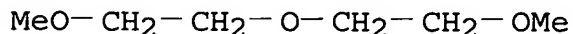
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)

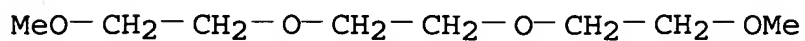


RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



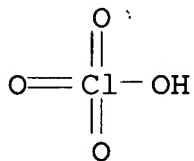
RN 112-49-2 HCAPLUS  
 CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

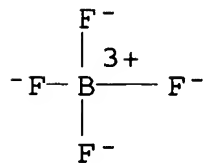
Li

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

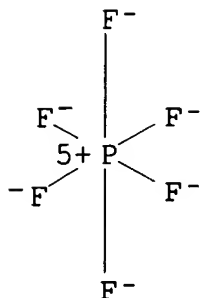
RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

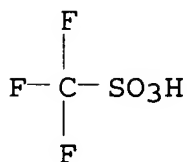
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

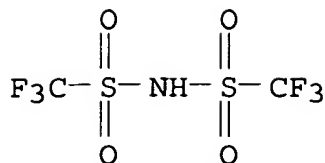
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-60  
 INCL 429215000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 IT Fluoropolymers, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (binder; method for reducing voltage delay in alkali metal  
 electrochem. cell activated with **nonaq. electrolyte** having sulfate additive)  
 IT Primary batteries  
 (lithium; method for reducing voltage delay in alkali metal  
 electrochem. cell activated with **nonaq. electrolyte** having sulfate additive)  
 IT Battery **electrolytes**  
 (method for reducing voltage delay in alkali metal electrochem.  
 cell activated with **nonaq. electrolyte** having sulfate additive)  
 IT Esters, uses  
 Lactams  
 Lactones  
 RL: DEV (Device component use); USES (Uses)  
 (method for reducing voltage delay in alkali metal electrochem.  
 cell activated with **nonaq. electrolyte** having sulfate additive)  
 IT Carbon black, uses  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES  
 (Uses)  
 (method for reducing voltage delay in alkali metal electrochem.  
 cell activated with **nonaq. electrolyte** having sulfate additive)  
 IT 7440-02-0, Nickel, uses 7440-32-6, Titanium, uses  
 RL: DEV (Device component use); USES (Uses)  
 (current collector; method for reducing voltage delay in alkali  
 metal electrochem. cell activated with **nonaq. electrolyte** having sulfate additive)  
 IT 60-29-7, Ether, uses 67-68-5, DmsO, uses 68-12-2, Dmf, uses



75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate  
 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
 105-58-8, Diethyl carbonate 108-20-3, Diisopropyl ether  
 108-29-2,  $\gamma$ -Valerolactone 108-32-7, Propylene carbonate  
 110-71-4, 1,2-Dimethoxyethane 111-96-6, Diglyme  
 112-49-2, Triglyme 120-94-5, n-Methylpyrrolidine  
 127-19-5, Dimethyl acetamide 143-24-8, TeTraglyme 463-79-6D,  
 Carbonic acid, dialkyl derivative, uses 556-65-0, Lithium thiocyanate  
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate  
 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane  
 2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 5137-45-1,  
 1-Ethoxy-2-methoxyethane 7439-93-2, Lithium, uses  
 7791-03-9, Lithium perchlorate 11099-11-9, Vanadium oxide  
 11105-02-5, Silver vanadium oxide 12057-24-8, Lithia, uses  
 12789-09-2, Copper Vanadium oxide 12798-95-7 13453-75-3, Lithium  
 fluorosulfate 14024-11-4, Lithium tetrachloroaluminate  
 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium  
 tetraphenylborate 15955-98-3, Lithium tetrachlorogallate  
 18424-17-4, Lithium hexafluoroantimonate 21324-40-3,  
 Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl  
 carbonate 56525-42-9, Methyl propyl carbonate 90076-65-6  
 115028-88-1 132404-42-3 181183-66-4, Copper silver vanadium  
 oxide

RL: DEV (Device component use); USES (Uses)

(method for reducing voltage delay in alkali metal electrochem.  
 cell activated with **nonaq. electrolyte** having  
 sulfate additive)

IT 57-52-3, Bis(triethyltin) sulfate 75-93-4, Monomethyl sulfate  
 110-92-9 540-82-9, Monoethyl sulfate 4153-34-8,  
 Bis(trimethyltin) sulfate 7440-44-0, Carbon, uses 10218-25-4,  
 Bis(tripropyltin) sulfate 10249-85-1, Bis(tributyltin) sulfate  
 13425-84-8 15507-13-8, Monobutyl sulfate 18056-07-0,  
 Bis(triethylsilyl)sulfate 18166-30-8 18230-79-0 18306-29-1,  
 Bis(trimethylsilyl)sulfate 18495-74-4, Dibenzyl sulfate  
 21706-75-2 26687-85-4 27063-40-7 55909-70-1, Sulfuric acid,  
 Methyl methylphenyl ester 57875-67-9 59427-05-3 63869-87-4  
 91695-35-1 191605-42-2 320381-72-4 320381-73-5 320381-74-6  
 320381-75-7 320381-76-8 320381-77-9 320381-78-0 320381-79-1  
 320381-80-4 320381-81-5 320381-82-6 320381-83-7 320381-84-8  
 320381-85-9 320381-86-0 320381-87-1

RL: DEV (Device component use); MOA (Modifier or additive use); USES  
 (Uses)

(method for reducing voltage delay in alkali metal electrochem.  
 cell activated with **nonaq. electrolyte** having  
 sulfate additive)

IT 7429-90-5, Aluminum, uses 7782-42-5, Graphite, uses 12597-68-1,

Stainless steel, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(powdered; method for reducing voltage delay in alkali metal electrochem. cell activated with **nonaq.** electrolyte having sulfate additive)

L52 ANSWER 28 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2001:1264 Document No. 134:59141 **Nonaqueous**

**electrolyte** battery. Hommura, Hayato; Imoto, Hiroshi; Nagamine, Masayuki (Sony Corporation, Japan). Eur. Pat. Appl. EP 1063720 A2 20001227, 10 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-112794 20000616. PRIORITY: JP 1999-176007 19990622.

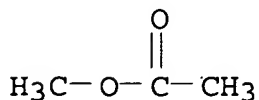
AB A **nonaq. electrolyte** secondary battery incorporating a pos. electrode containing a pos.-electrode active material and a neg. electrode containing a neg.-electrode active material which are laminated through a separator and containing **nonaq. electrolytic** solution enclosed therein, the **nonaq. electrolyte** secondary battery having a spinel manganese composite metal oxide serving as the pos.-electrode active material, wherein the separator is constituted by paper having a thickness of 15  $\mu$ m to 60  $\mu$ m and permeability of 1 s/100 CC to 10 s/100 CC.

IT 79-20-9, Methyl acetate 141-78-6, Ethyl acetate, uses 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6

RL: DEV (Device component use); USES (Uses)  
(**nonaq. electrolyte** battery)

RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)

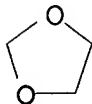


RN 141-78-6 HCAPLUS

CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)

Et-O-Ac

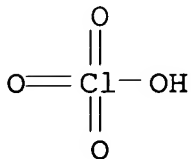
RN 646-06-0 HCAPLUS  
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

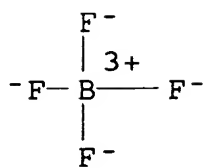
Li

RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



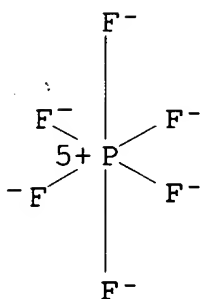
● Li

RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

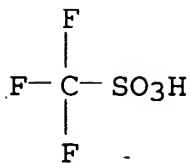
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

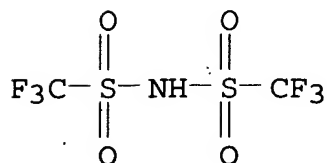
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40

ICS H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery **nonaq electrolyte**

IT Battery anodes

Conducting polymers

Secondary batteries

Secondary battery separators

(**nonaq. electrolyte** battery)

IT Carbonaceous materials (technological products)

Oxides (inorganic), uses

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolyte** battery)

IT Lithium alloy, base

RL: DEV (Device component use); USES (Uses)

(**nonaq. electrolyte** battery)

IT 7429-90-5, Aluminum, uses

RL: DEV (Device component use); USES (Uses)

(current collector; **nonaq. electrolyte** battery)

IT 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate

96-47-9, 2-Methyltetrahydrofuran 96-48-0,  $\gamma$ -Butyrolactone

96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-94-4,

Ethyl formate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane

126-33-0, Sulfolane 141-78-6, Ethyl acetate, uses

616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate

629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane

2550-62-1, Lithium methanesulfonate 7439-93-2, Lithium,

uses 7791-03-9, Lithium perchlorate 9004-34-6,

Cellulose, uses 12057-17-9, Lithium manganese oxide 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35678-71-8, MethylSulfolane 90076-65-6

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte battery)

L52 ANSWER 29 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2000:635203 Document No. 133:196043 Hydrogen fluoride additive for **nonaqueous electrolyte** in alkali metal electrochemical cells. Takeuchi, Esther S.; Leising, Randolph A. (Wilson Greatbatch Ltd., USA). U.S. US 6117591 A 20000912, 10 pp. (English). CODEN: USXXAM. APPLICATION: US 1998-85212 19980527.

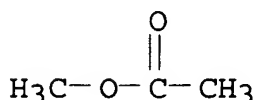
AB An alkali metal, solid cathode, **nonaq.** electrochem. cell capable of delivering high current pulses, rapidly recovering its open circuit voltage and having high current capacity, is disclosed. The stated benefits are realized by the addition of hydrogen fluoride to the **nonaq. electrolyte** comprising an alkali metal salt dissolved in a mixture of a low viscosity solvent and a high permittivity solvent. A preferred solvent mixture includes propylene carbonate, dimethoxyethane and hydrogen fluoride having LiAsF<sub>6</sub> or LiPF<sub>6</sub> dissolved therein.

IT 79-20-9, Methyl acetate 111-96-6, Diglyme 112-49-2, Triglyme 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6

RL: DEV (Device component use); USES (Uses)  
(hydrogen fluoride additive for **nonaq.** **electrolyte** in alkali metal electrochem. cells)

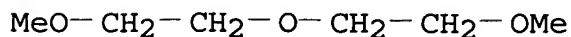
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)

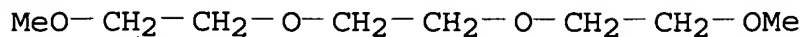


RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



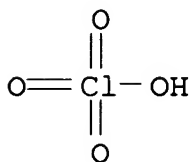
RN 112-49-2 HCAPLUS  
 CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

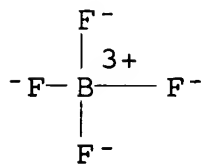
Li

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



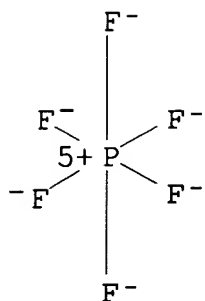
● Li

RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



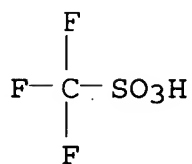
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

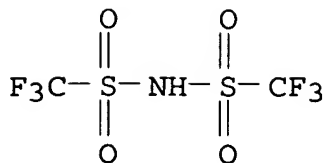
RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)





● Li

IC ICM H01M004-58  
 INCL 429231950  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST hydrogen fluoride additive **nonaq electrolyte**  
 alkali metal battery  
 IT Battery **electrolytes**  
 (hydrogen fluoride additive for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)  
 IT Alkali metal salts  
 Esters, uses  
 Ethers, uses  
 RL: DEV (Device component use); USES (Uses)  
 (hydrogen fluoride additive for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)  
 IT Carbon black, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (hydrogen fluoride additive for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)  
 IT Fluoropolymers, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (hydrogen fluoride additive for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)  
 IT Primary batteries  
 (lithium; hydrogen fluoride additive for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)  
 IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,  
 uses 79-20-9, Methyl acetate 96-48-0,  
 γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,  
 Diethyl carbonate 108-20-3, Diisopropyl ether 108-29-2,  
 γ-Valerolactone 108-32-7, Propylene carbonate 109-99-9,  
 Thf, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6,  
 Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide  
 143-24-8, Tetraglyme 463-79-6D, Carbonic acid, dialkyl ester, uses  
 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate  
 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate

629-14-1, 1,2-Diethoxyethane 872-50-4, uses 2923-17-3  
 2923-20-8 4437-85-8, Butylene carbonate 5137-45-1,  
 1-Ethoxy-2-methoxyethane 7439-93-2, Lithium, uses  
 7791-03-9, Lithium perchlorate 11105-02-5, Silver vanadium  
 oxide 12057-24-8, Lithia, uses 13453-75-3, Lithium fluorosulfate  
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9,  
 Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate  
 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium  
 hexafluoroantimonate 21324-40-3, Lithium  
 hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl  
 carbonate 56525-42-9, Methyl propyl carbonate 90076-65-6  
 115028-88-1 132404-42-3

RL: DEV (Device component use); USES (Uses)

(hydrogen fluoride additive for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)

IT 7440-44-0, Carbon, uses 7664-39-3, Hydrogen fluoride, uses  
 7782-42-5, Graphite, uses

RL: MOA (Modifier or additive use); USES (Uses)

(hydrogen fluoride additive for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)

IT 9002-84-0, Teflon 7a

RL: TEM (Technical or engineered material use); USES (Uses)

(hydrogen fluoride additive for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6,  
 Titanium, uses 12597-68-1, Stainless steel, uses

RL: MOA (Modifier or additive use); USES (Uses)

(powder; hydrogen fluoride additive for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)

L52 ANSWER 30 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2000:608508 Document No. 133:196016 Cobalt-based alloys as cathode  
 current collectors in **nonaqueous** electrochemical cells.

Frysz, Christine A.; Smesko, Sally A.; Kreidler, Peter A.; Brown, W.  
 Richard; Takeuchi, Esther S. (Wilson Greatbatch Ltd., USA). Eur.  
 Pat. Appl. EP 1032063 A1 20000830, 26 pp. DESIGNATED STATES: R:  
 AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE,  
 SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP  
 2000-301434 20000223. PRIORITY: US 1999-257795 19990225.

AB Cobalt-based alloys are provided for use as a pos. electrode current  
 collector in a solid cathode, **nonaq.** liquid

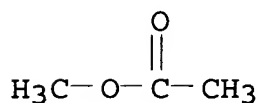
**electrolyte**, alkali metal anode active electrochem. cell.

The cobalt-based alloys are characterized by chemical compatibility  
 with aggressive cell environments, high corrosion resistance and  
 resistance to fluorination and passivation at elevated temps., thus  
 improving the longevity and performance of the electrochem. cell.

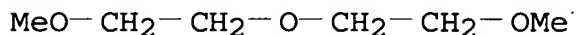
The battery can be of either a primary or a secondary configuration.

IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
 112-49-2, Triglyme 7439-93-2, Lithium, uses  
 7791-03-9, Lithium perchlorate 14283-07-9, Lithium  
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate  
 33454-82-9, Lithium triflate 90076-65-6  
 RL: DEV (Device component use); USES (Uses)  
 (cobalt-based alloys as cathode current collectors in  
 nonaq. electrochem. cells)

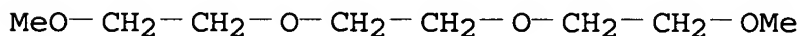
RN 79-20-9 HCAPLUS  
 CN Acetic acid, methyl ester (CA INDEX NAME)



RN 111-96-6 HCAPLUS  
 CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



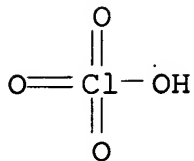
RN 112-49-2 HCAPLUS  
 CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

Li

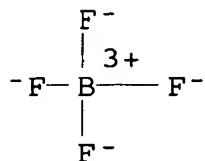
RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 14283-07-9 HCAPLUS

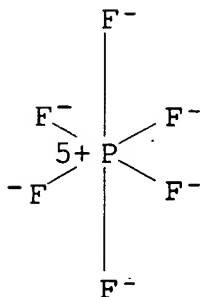
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

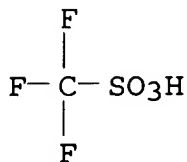
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



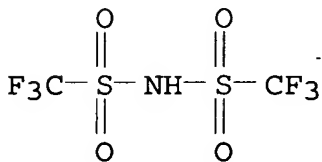
● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M004-66  
 ICS C22C019-07  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 55, 56  
 IT Battery cathodes  
     (cobalt-based alloys as cathode current collectors in  
     **nonaq.** electrochem. cells)  
 IT Alkali metal compounds  
     Alkali metals, uses  
     Alkaline earth metals  
     Carbonaceous materials (technological products)  
     Group IIIB elements  
 RL: DEV (Device component use); USES (Uses)  
     (cobalt-based alloys as cathode current collectors in  
     **nonaq.** electrochem. cells)

IT 7429-90-5, Aluminum, uses 7439-91-0, Lanthanum, uses 7439-96-5, Manganese, uses 7440-21-3, Silicon, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-41-7, Beryllium, uses 7440-67-7, Zirconium, uses 7704-34-9, Sulfur, uses  
 RL: DEV (Device component use); USES (Uses)  
 (alloy containing; cobalt-based alloys as cathode current collectors in **nonaq.** electrochem. cells)

IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses **79-20-9**, Methyl acetate 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-20-3, Diisopropyl ether 108-29-2,  $\gamma$ -Valerolactone 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane **111-96-6**, Diglyme **112-49-2**, Triglyme 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 872-50-4, uses 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide, uses 1344-70-3, Copper oxide 2923-17-3 2923-20-8 3889-75-6, Carbon monofluoride 4437-85-8, Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane **7439-93-2**, Lithium, uses 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7723-14-0, Phosphorus, uses 7782-42-5, Graphite, uses **7791-03-9**, Lithium perchlorate 8049-15-8, Elgiloy 11099-11-9, Vanadium oxide 11104-61-3, Cobalt oxide 11105-02-5, Silver vanadium oxide 11115-78-9, Copper sulfide 11126-12-8, Iron sulfide 12031-65-1, Lithium nickel oxide  $\text{LiNiO}_2$  12039-13-3, Titanium disulfide 12057-17-9, Lithium manganese oxide  $\text{LiMn}_2\text{O}_4$  12057-24-8, Lithia, uses 12068-85-8, Iron disulfide 12190-79-3, Cobalt lithium oxide  $\text{CoLiO}_2$  12605-92-4, L-605 12646-94-5, MP35N 12789-09-2, Copper vanadium oxide 12798-95-7 13453-75-3, Lithium fluorosulfonate 14024-11-4, Lithium tetrachloroaluminate **14283-07-9**, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate **21324-40-3**, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate **33454-82-9**, Lithium triflate 35363-40-7, Ethyl propyl carbonate 37286-22-9, Havar 51311-17-2, Carbon fluoride 56525-42-9, Methyl propyl carbonate 68467-51-6, Haynes 556 **90076-65-6** 115028-88-1 131344-56-4, Cobalt lithium nickel oxide 132404-42-3 139658-36-9, Ultimet 181183-66-4, Copper silver vanadium oxide 256650-80-3, Cobalt lithium tin oxide  $\text{Co}_0.92\text{LiSn}_{0.08}\text{O}_2$  289045-19-8 289045-20-1 289045-21-2 289045-22-3 289045-23-4  
 RL: DEV (Device component use); USES (Uses)  
 (cobalt-based alloys as cathode current collectors in **nonaq.** electrochem. cells)

L52 ANSWER 31 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

2000:367148 Document No. 132:350275 Alkali metal electrochemical cell having an improved cathode activated with a **nonaqueous electrolyte** having a passivation inhibitor additive. Takeuchi, Esther S.; Leising, Randolph A.; Gan, Hong (Wilson Greatbatch Ltd., USA). Eur. Pat. Appl. EP 1005098 A2 20000531, 18 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1999-308910 19991109. PRIORITY: US 1998-200304 19981125.

AB The present invention is directed to an unexpected benefit in a lithium cell which may be derived from using a combination of silver vanadium oxide prepared in a temperature range of 450° to 500° activated with a **nonaq. electrolyte** having a passivation inhibitor additive selected from a nitrite, a nitrate, a carbonate, a dicarbonate, a phosphonate, a phosphate, a sulfate and hydrogen fluoride, and mixts. thereof. The benefits may include addnl. battery life resulting from a reduction in voltage delay and RDC build-up. A preferred **electrolyte** is 1M LiAsF<sub>6</sub> in a 50:50 mixture, by volume, of PC and DME having dibenzyl carbonate added therein.

IT 7439-93-2, **Lithium**, uses

RL: DEV (Device component use); USES (Uses)  
(alkali **metal** battery having improved cathode activated with **nonaq. electrolyte** having passivation inhibitor additive)

RN 7439-93-2 HCAPLUS

CN Lithium (CA INDEX NAME)

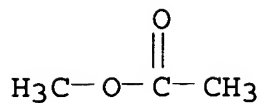
Li

IT 79-20-9, Methyl acetate 111-96-6 112-49-2  
, Triglyme 7791-03-9 14283-07-9, **Lithium**  
tetrafluoroborate 21324-40-3, **Lithium**  
hexafluorophosphate 33454-82-9, **Lithium** triflate  
90076-65-6

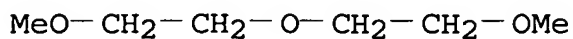
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(alkali **metal** battery having improved cathode activated with **nonaq. electrolyte** having passivation inhibitor additive)

RN 79-20-9 HCAPLUS

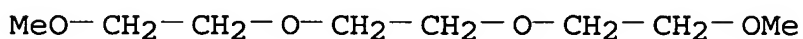
CN Acetic acid, methyl ester (CA INDEX NAME)



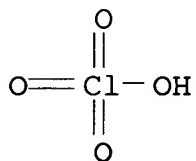
RN 111-96-6 HCAPLUS  
CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS  
CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



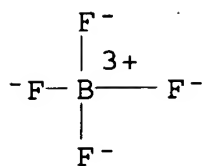
RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

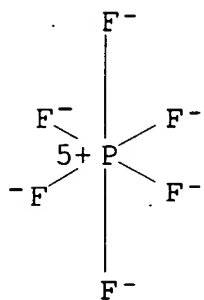
RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

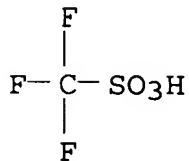
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

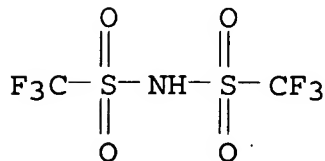
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-16

ICS H01M004-48

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Air

Battery cathodes

(alkali metal battery having improved cathode activated with  
**nonaq. electrolyte** having passivation inhibitor  
additive)

IT Transition metal chalcogenides

RL: DEV (Device component use); USES (Uses)

(alkali metal battery having improved cathode activated with  
**nonaq. electrolyte** having passivation inhibitor  
additive)

IT 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide nio,  
uses 1344-70-3, Copper oxide 7439-93-2, **Li**thium  
, uses 11104-61-3, Cobalt oxide 11105-02-5, Silver vanadium  
oxide 11115-78-9, Copper sulfide 11126-12-8, Iron sulfide  
12039-13-3, Titanium disulfide 12068-85-8, Iron disulfide  
12789-09-2, Copper vanadium oxide 181183-66-4, Copper silver  
vanadium oxide

RL: DEV (Device component use); USES (Uses)

(alkali **metal** battery having improved cathode activated  
with **nonaq. electrolyte** having passivation  
inhibitor additive)

IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,  
uses 79-20-9, Methyl acetate 96-48-0,  
γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8  
108-20-3, Diisopropyl ether 108-29-2, γ-Valerolactone  
108-32-7, Propylene carbonate 109-99-9, uses 110-71-4,  
1,2-Dimethoxyethane 111-96-6 112-49-2, Triglyme

127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme 556-65-0,  
**Lithium** thiocyanate 616-38-6, Dimethyl carbonate  
 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate  
 629-14-1, 1,2-Diethoxyethane 2923-17-3 2923-20-8 4437-85-8,  
 Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane  
 7790-69-4, **Lithium** nitrate 7791-03-9  
 13453-75-3, **Lithium** fluorosulfate 14024-11-4,  
**Lithium** tetrachloroaluminate 14283-07-9,  
**Lithium** tetrafluoroborate 14485-20-2; **Lithium**  
 tetraphenylborate 15955-98-3, **Lithium** tetrachlorogallate  
 18424-17-4, **Lithium** hexafluoroantimonate  
 21324-40-3, **Lithium** hexafluorophosphate  
 29935-35-1, **Lithium** hexafluoroarsenate 30207-69-3,  
 -Methylpyrrolidinone 33454-82-9, **Lithium**  
 triflate 35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl  
 propyl carbonate 90076-65-6 132404-42-3  
 RL: DEV (Device component use); TEM (Technical or engineered  
 material use); USES (Uses)

(alkali metal battery having improved cathode activated  
 with **nonaq. electrolyte** having passivation  
 inhibitor additive)

IT 57-52-3, Bis(triethyltin)sulfate 64-67-5, Diethyl sulfate  
 77-78-1, Dimethyl sulfate 107-66-4 109-95-5, Ethyl nitrite  
 540-80-7, tert-Butyl nitrite 541-42-4, Isopropyl nitrite  
 542-56-3, Isobutyl nitrite 543-29-3, Isobutyl nitrate 543-67-9,  
 Propyl nitrite 544-16-1, Butyl nitrite 598-02-7, Diethyl  
 phosphate 598-05-0, Dipropyl sulfate 624-91-9, Methyl nitrite  
 625-22-9, Dibutyl sulfate 627-13-4, Propyl nitrate 683-08-9,  
 Diethyl methyl phosphonate 701-64-4, Mono-phenyl phosphate  
 756-79-6, Dimethyl methyl phosphonate 762-04-9, Diethyl  
 phosphonate 773-47-7, Dimethyl benzylphosphonate 812-00-0,  
 Mono-methyl phosphate 813-78-5, Dimethyl phosphate 838-85-7,  
 Diphenyl phosphate 868-85-9, Dimethyl phosphonate 884-90-2,  
 Phosphoric acid, diethyl phenylmethyl ester 926-05-6, tert-Butyl  
 nitrate 928-45-0, Butyl nitrate 935-05-7, Benzyl nitrite  
 1469-70-1, Allyl ethyl carbonate 1610-33-9, Ethyl methyl  
 phosphonate 1623-06-9, Mono-propyl phosphate 1623-07-0, Benzyl  
 phosphate 1623-08-1, Dibenzyl phosphate 1623-14-9, Mono-ethyl  
 phosphate 1623-15-0, Mono-butyl phosphate 1707-92-2, Tribenzyl  
 phosphate 1712-64-7, Isopropyl nitrate 1804-93-9, Dipropyl  
 phosphate 1809-19-4, Dibutyl phosphonate 1809-21-8, Dipropyl  
 phosphonate 2104-20-3, Phenyl nitrate 2404-73-1, Dibutyl methyl  
 phosphonate 2649-11-8, Didodecyl sulfate 3066-75-9, Phosphoric  
 acid, diethyl 2-propenyl, ester 3459-92-5, Dibenzyl carbonate  
 4074-56-0, Diphenyl sulfate 4427-92-3, 4-Phenyl-1,3-dioxolan-2-one  
 4712-55-4, Diphenyl phosphonate 5944-45-6, Dicarbonic acid, methyl  
 2-propenyl ester 5944-47-8, Dicarbonic acid, ethyl phenylmethyl

ester 6410-56-6, Dipropyl methyl phosphonate 7526-26-3, Diphenyl methyl phosphonate 7664-38-2, Phosphoric acid, uses 7748-09-6, Diallyl phosphate 7757-79-1, Potassium nitrate, uses 10124-37-5, Calcium nitrate 10377-60-3, Magnesium nitrate 10497-05-9, Tris(trimethylsilyl)phosphate 13598-36-2, Phosphorous acid, uses 15022-08-9, Diallyl carbonate 15285-42-4, Benzyl nitrate 17176-77-1, Dibenzyl phosphonate 18306-29-1, Bis(trimethylsilyl)sulfate 18495-74-4, Dibenzyl sulfate 19236-58-9, Dibenzyl methyl phosphonate 24424-99-5, Di-tert-butyl dicarbonate 27991-93-1, Sulfuric acid, Bis(4-nitrophenyl) ester, uses 28519-15-5, Phosphoric acid, dibutyl phenylmethyl ester 31139-36-3, Dibenzyl dicarbonate 32636-65-0, Phosphoric acid, diphenylmethyl diethyl ester 34207-39-1, Nitrous acid, phenyl ester 54963-39-2, Phosphonic acid, (diphenylmethyl)-, dimethyl ester 57772-64-2 59577-32-1 66065-85-8, Succinimidyl-2,2,2-trichloroethyl carbonate 66085-82-3, Dicarbonic acid, methylphenyl ester 66186-16-1, Didecyl sulfate 66735-55-5, Methyl Phenyl sulfate 72101-14-5, Phosphoric acid, Dimethyl methylphenyl ester 74124-79-1 104184-81-8, Sulfuric acid, 2-chloroethyl ethyl ester 115491-93-5, Diallyl dicarbonate 116977-36-7, Dicarbonic acid, ethyl 2-propenyl ester 246140-06-7, Dicarbonic acid, methyl phenylmethyl ester 246140-07-8, Dicarbonic acid, phenylmethyl propyl ester 246140-10-3, Dicarbonic acid, butyl phenylmethyl ester 246140-17-0, Dicarbonic acid, mono-2-propenyl ester 246140-18-1, Dicarbonic acid, 2-propenyl propyl ester 246140-20-5, Dicarbonic acid, mono-methyl ester 246140-22-7, Dicarbonic acid, mono-ethyl ester 246140-24-9, Dicarbonic acid, mono-propyl ester 246140-26-1, Dicarbonic acid, mono-butyl ester 246140-27-2, Dicarbonic acid, cyanomethyl methyl ester 246140-29-4, Dicarbonic acid, methyl nitromethyl ester 269402-58-6 269402-59-7 269402-60-0

RL: MOA (Modifier or additive use); USES (Uses)

(alkali metal battery having improved cathode activated with **nonaq. electrolyte** having passivation inhibitor additive)

IT 534-16-7, Silver carbonate 563-63-3, Silver acetate 1314-62-1, Vanadium pentoxide, reactions 7440-22-4, Silver, reactions 7761-88-8, Silver nitrate, reactions 7783-99-5, Silver nitrite 20667-12-3, Silver oxide ag2o

RL: RCT (Reactant); RACT (Reactant or reagent)

(alkali metal battery having improved cathode activated with **nonaq. electrolyte** having passivation inhibitor additive)

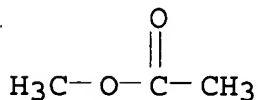
IT 7440-37-1, Argon, uses 7440-59-7, Helium, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses

RL: TEM (Technical or engineered material use); USES (Uses)

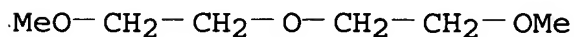
(alkali metal battery having improved cathode activated with

**nonaq. electrolyte** having passivation inhibitor additive)

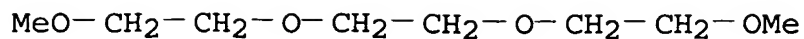
- L52 ANSWER 32 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2000:34689 Document No. 132:80952 Inorganic and organic nitrate additives for **nonaqueous electrolyte** in alkali metal batteries. Gan, Hong; Takuchi, Ester (Wilson Greatbatch Ltd., USA). Eur. Pat. Appl. EP 971432 A1 20000112, 26 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1999-305473 19990709. PRIORITY: US 1998-112597 19980709.
- AB A **nonaq.** alkali metal, solid cathode battery capable of delivering high current pulses, rapidly recovering its open circuit voltage and having high current capacity has  $\geq 1$  nitrate additive to an **electrolyte** comprising an alkali metal salt dissolved in a mixture of a low viscosity solvent and a high permittivity solvent. A preferred solvent mixture includes propylene carbonate, dimethoxyethane, and an alkali metal nitrate, alkaline earth metal nitrate, and/or an organic alkyl nitrate additive.
- IT 79-20-9, Methyl acetate 111-96-6, Diglyme 112-49-2, Triglyme 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6  
 RL: DEV (Device component use); USES (Uses)  
 (inorg. and organic nitrate additives for **nonaq. electrolyte** in alkali metal batteries)
- RN 79-20-9 HCAPLUS  
 CN Acetic acid, methyl ester (CA INDEX NAME)



- RN 111-96-6 HCAPLUS  
 CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



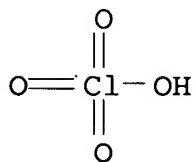
- RN 112-49-2 HCAPLUS  
 CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

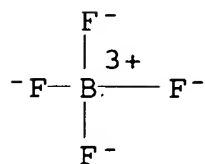
Li

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



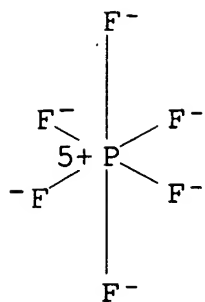
● Li

RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



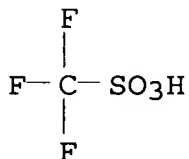
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

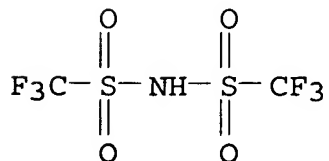
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40  
ICS H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery **electrolyte** inorg org nitrate additive

IT Fluoropolymers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(binder; inorg. and organic nitrate additives for **nonaq. electrolyte** in alkali metal batteries)

IT Carbon black, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(conductive additive; inorg. and organic nitrate additives for **nonaq. electrolyte** in alkali metal batteries)

IT Battery **electrolytes**  
Primary batteries  
(inorg. and organic nitrate additives for **nonaq. electrolyte** in alkali metal batteries)

IT Esters, uses  
Ethers, uses  
RL: DEV (Device component use); USES (Uses)  
(inorg. and organic nitrate additives for **nonaq. electrolyte** in alkali metal batteries)

IT Nitrates, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(inorg. and organic nitrate additives for **nonaq. electrolyte** in alkali metal batteries)

IT Alkali metal compounds  
Alkaline earth compounds  
RL: MOA (Modifier or additive use); USES (Uses)  
(nitrates; inorg. and organic nitrate additives for **nonaq. electrolyte** in alkali metal batteries)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6, Titanium, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 12597-68-1, Stainless steel, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(conductive additive; inorg. and organic nitrate additives for **nonaq. electrolyte** in alkali metal batteries)

IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 872-50-4, uses 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide, uses



1344-70-3, Copper oxide 2923-17-3 2923-20-8 4437-85-8,  
 Butylene carbonate 5137-45-1, 1-Ethoxy-2-methoxyethane  
 7439-93-2, Lithium, uses 7791-03-9, Lithium  
 perchlorate 11104-61-3, Cobalt oxide 11105-02-5, Silver vanadium  
 oxide 11115-78-9, Copper sulfide 11126-12-8, Iron sulfide  
 12039-13-3, Titanium disulfide 12068-85-8, Iron disulfide  
 12789-09-2, Copper vanadium oxide 12798-95-7 13453-75-3, Lithium  
 fluorosulfonate 14024-11-4, Lithium tetrachloroaluminate  
 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium  
 tetraphenylborate 15955-98-3, Lithium tetrachlorogallate  
 18424-17-4, Lithium hexafluoroantimonate 21324-40-3,  
 Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl  
 carbonate 51311-17-2, Carbon fluoride 56525-42-9, Methyl propyl  
 carbonate 90076-65-6 115028-88-1, Benzenesulfonic acid,  
 pentafluoro-, lithium salt 132404-42-3  
 181183-66-4, Copper silver vanadium oxide  
 RL: DEV (Device component use); USES (Uses)

(inorg. and organic nitrate additives for **nonaq.**

**electrolyte** in alkali metal batteries)

IT 543-29-3, IsoButyl nitrate 627-13-4, Propyl nitrate 926-05-6,  
 tert-Butyl nitrate 928-45-0, Butyl nitrate 1712-64-7, IsoPropyl  
 nitrate 2104-20-3, Phenyl nitrate 7631-99-4, Sodium nitrate,  
 uses 7757-79-1, Potassium nitrate, uses 7790-69-4, Lithium  
 nitrate 10124-37-5, Calcium nitrate 10377-60-3, Magnesium  
 nitrate 15285-42-4, Benzyl nitrate

RL: MOA (Modifier or additive use); USES (Uses)

(inorg. and organic nitrate additives for **nonaq.**

**electrolyte** in alkali metal batteries)

L52 ANSWER 33 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2000:31275 Document No. 132:52440 Organic sulfate additives for  
**nonaqueous electrolyte** in alkali metal batteries.

Gan, Hong; Takuchi, Esther S. (Wilson Greatbatch Ltd., USA). U.S.  
 US 6013394 A 20000111, 14 pp. (English). CODEN: USXXAM.  
 APPLICATION: US 1998-9557 19980120.

AB An alkali metal, solid cathode, **nonaq.** electrochem. cell  
 capable of delivering high current pulses, rapidly recovering its  
 open circuit voltage and having high current capacity, is disclosed.  
 The stated benefits are realized by the addition of at least one organic  
 sulfate additive to an **electrolyte** comprising an alkali  
 metal salt dissolved in a mixture of a low viscosity solvent and a  
 high permittivity solvent. A preferred solvent mixture includes  
 propylene carbonate, dimethoxyethane and a dialkyl sulfate additive.

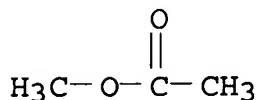
IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
 112-49-2, Triglyme 7439-93-2, Lithium, uses  
 7791-03-9, Lithium perchlorate 14283-07-9, Lithium

tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate  
33454-82-9, Lithium triflate 90076-65-6

RL: DEV (Device component use); USES (Uses)  
(organic sulfate additives for **nonaq. electrolyte**  
in alkali metal batteries)

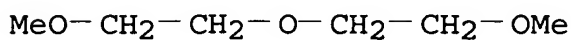
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



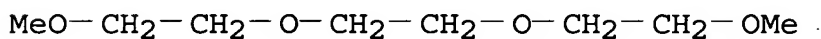
RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



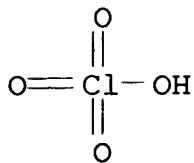
RN 7439-93-2 HCAPLUS

CN Lithium (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS

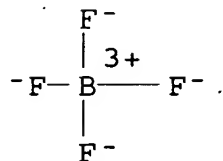
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

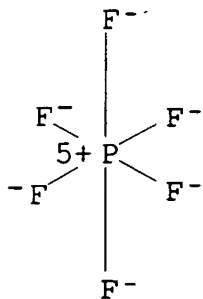
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

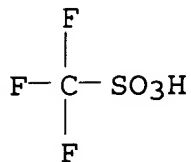
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

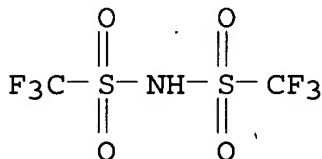
● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-14  
 INCL 429325000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery org sulfate additive **nonaq electrolyte**  
 IT Fluoropolymers, uses  
   RL: TEM (Technical or engineered material use); USES (Uses)  
     (binder; organic sulfate additives for **nonaq.**  
       **electrolyte** in alkali metal batteries)  
 IT Carbon black, uses  
   RL: MOA (Modifier or additive use); USES (Uses)  
     (conductive additive; organic sulfate additives for **nonaq.**  
       **electrolyte** in alkali metal batteries)  
 IT Battery anodes  
   Battery cathodes  
   Battery **electrolytes**

## Primary batteries

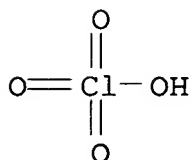
(organic sulfate additives for **nonaq. electrolyte**  
in alkali metal batteries)

- IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(conductive additive; organic sulfate additives for **nonaq. electrolyte** in alkali metal batteries)
- IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,  
uses 79-20-9, Methyl acetate 96-48-0,  
γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,  
Diethyl carbonate 108-20-3, Diisopropyl ether 108-29-2,  
γ-Valerolactone 108-32-7, Propylene carbonate 109-99-9,  
Thf, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6,  
Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide  
143-24-8, Tetraglyme 556-65-0, Lithium thiocyanate 616-38-6,  
Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1,  
Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 872-50-4, uses  
2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 5137-45-1,  
1-Ethoxy, 2-methoxy-ethane 7439-93-2, Lithium, uses  
7791-03-9, Lithium perchlorate 11099-11-9, Vanadium oxide  
11105-02-5, Silver vanadium oxide 12789-09-2, Copper vanadium  
oxide 12798-95-7 13453-75-3, Lithium fluorosulfonate  
14024-11-4, Lithium tetrachloroaluminate 14283-07-9,  
Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate  
18424-17-4, Lithium hexafluoroantimonate 21324-40-3,  
Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl  
carbonate 56525-42-9, Methyl propyl carbonate 90076-65-6  
115028-88-1 132404-42-3 181183-66-4, Copper silver vanadium  
oxide  
RL: DEV (Device component use); USES (Uses)  
(organic sulfate additives for **nonaq. electrolyte**  
in alkali metal batteries)
- IT 18306-29-1, Bis(trimethylsilyl)sulfate  
RL: MOA (Modifier or additive use); USES (Uses)  
(organic sulfate additives for **nonaq. electrolyte**  
in alkali metal batteries)
- IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6,  
Titanium, uses 12597-68-1, Stainless steel, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(powder, conductive additive; organic sulfate additives for  
**nonaq. electrolyte** in alkali metal batteries)

L52 ANSWER 34 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
1999:672489 Document No. 131:288847 Dicarboxate additives for  
**nonaqueous electrolyte** in alkali metal  
electrochemical cells. Gan, Hong; Takeuchi, Esther S. (Wilson

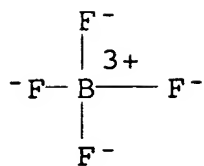
Greatbatch Ltd., USA). Eur. Pat. Appl. EP 951085 A1 19991020, 22 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1999-301845 19990311. PRIORITY: US 1998-61582 19980416.

- AB An alkali metal, solid cathode, **nonaq.** electrochem. cell capable of delivering high current pulses, rapidly recovering its open circuit voltage and having high current capacity has the additive of  $\geq 1$  dicarbonate to an **electrolyte** comprising an alkali metal salt dissolved in a mixture of a low viscosity solvent and a high permittivity solvent. A preferred solvent mixture includes propylene carbonate, dimethoxyethane, and an alkyl dicarbonate additive.
- IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6  
 RL: DEV (Device component use); USES (Uses)  
 (dicarbonate additives for **nonaq. electrolyte** in alkali metal electrochem. cells)
- RN 7791-03-9 HCAPLUS
- CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



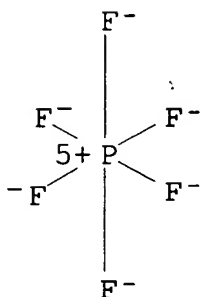
● Li

- RN 14283-07-9 HCAPLUS
- CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

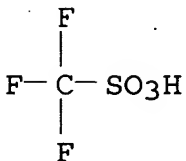
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

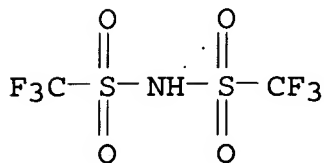
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
lithium salt (9CI) (CA INDEX NAME)



● Li

IT 79-20-9, Methyl acetate 111-96-6, Diglyme

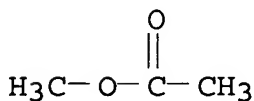
112-49-2, Triglyme

RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)

(dicarbonate additives for **nonaq. electrolyte**  
in alkali metal electrochem. cells)

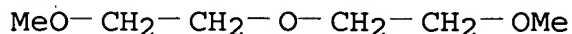
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



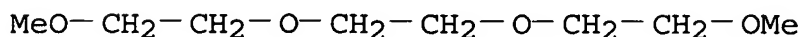
RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM H01M006-16



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST battery **electrolyte** carbonate additive  
IT Battery **electrolytes**  
(dicarbonate additives for **nonaq. electrolyte**  
in alkali metal electrochem. cells)  
IT Primary batteries  
(lithium; dicarbonate additives for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)  
IT 556-65-0, Lithium thiocyanate 2923-17-3 2923-20-8  
7791-03-9, Lithium perchlorate 13453-75-3, Lithium  
fluorosulfonate 14024-11-4, Lithium tetrachloroaluminate  
14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium  
tetraphenylborate 15955-98-3, Lithium tetrachlorogallate  
18424-17-4, Lithium hexafluoroantimonate 21324-40-3,  
Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
33454-82-9, Lithium triflate 90076-65-6  
115028-88-1 132404-42-3  
RL: DEV (Device component use); USES (Uses)  
(dicarbonate additives for **nonaq. electrolyte**  
in alkali metal electrochem. cells)  
IT 5944-45-6 5944-47-8, Dicarmonic acid, ethyl phenylmethyl ester  
24424-99-5, Di-tert-butyl dicarbonate 31139-36-3, Dibenzyl  
dicarbonate 66085-82-3 115491-93-5, Diallyl dicarbonate  
116977-36-7 246140-06-7 246140-07-8 246140-10-3 246140-17-0  
246140-18-1 246140-20-5 246140-22-7 246140-24-9 246140-26-1  
246140-27-2 246140-29-4  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(dicarbonate additives for **nonaq. electrolyte**  
in alkali metal electrochem. cells)  
IT 67-68-5, DmsO, uses 68-12-2, uses 75-05-8, Acetonitrile, uses  
79-20-9, Methyl acetate 96-48-0 96-49-1, Ethylene  
carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene  
carbonate 109-99-9, uses 110-71-4, 1,2-Dimethoxyethane  
111-96-6, Diglyme 112-49-2, Triglyme 127-19-5,  
Dimethyl acetamide 143-24-8, Tetraglyme 616-38-6, Dimethyl  
carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl  
carbonate 629-14-1, 1,2-Diethoxyethane 872-50-4,  
n-Methylpyrrolidone, uses 4437-85-8, Butylene carbonate  
5137-45-1, 1-Ethoxy-2-methoxyethane 35363-40-7, Ethyl propyl  
carbonate 56525-42-9, Methyl propyl carbonate  
RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)  
(dicarbonate additives for **nonaq. electrolyte**  
in alkali metal electrochem. cells)

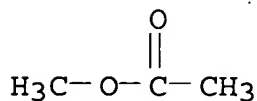
1999:409584 Document No. 131:47168 **Nonaqueous electrolyte** compositions. Heider, Udo; Wenige, Roger; Pohl, Ludwig; Niemann, Marlies; Jungnitz, Michael (Merck Patent G.m.b.H., Germany). Ger. Offen. DE 19757126 A1 19990624, 6 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1997-19757126 19971220.

AB **Nonaq. electrolyte** compns. comprise  $\geq 1$  conductor compound dissolved in a mixture of  $\geq 2$  **nonaq.** solvents. The composition of the **electrolyte** lies in the range of +10 mol% to -10 mol% of eutectic **electrolyte** composition. The **electrolyte** is suitable for primary or secondary batteries, a condenser, or a galvanic cell.

IT 79-20-9, Methyl acetate 105-54-4, Ethyl butyrate 108-21-4, Isopropyl acetate 141-78-6, Acetic acid ethyl ester, uses 554-12-1, Methyl propionate 623-42-7, Methyl butyrate 646-06-0, Dioxolane 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate 90076-65-6  
RL: DEV (Device component use); USES (Uses)  
(**nonaq. electrolyte** compns.)

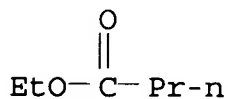
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



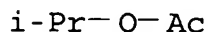
RN 105-54-4 HCAPLUS

CN Butanoic acid, ethyl ester (CA INDEX NAME)



RN 108-21-4 HCAPLUS

CN Acetic acid, 1-methylethyl ester (9CI) (CA INDEX NAME)

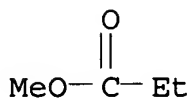


RN 141-78-6 HCAPLUS

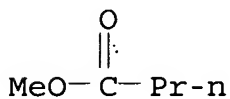
CN Acetic acid ethyl ester (8CI, 9CI) (CA INDEX NAME)

Et-O-Ac

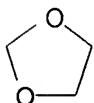
RN 554-12-1 HCAPLUS  
CN Propanoic acid, methyl ester (9CI) (CA INDEX NAME)



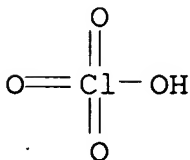
RN 623-42-7 HCAPLUS  
CN Butanoic acid, methyl ester (9CI) (CA INDEX NAME)



RN 646-06-0 HCAPLUS  
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)

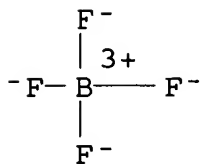


RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



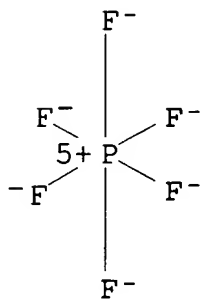
● Li

RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



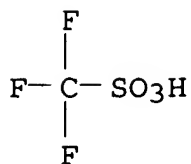
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

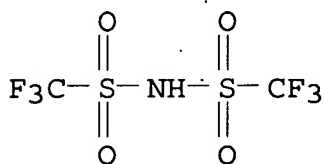
RN 33454-82-9 HCAPLUS  
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40

ICS H01M004-60

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76ST battery **nonaq electrolyte** compnIT Battery **electrolytes**

Capacitors

(nonaq. electrolyte compns.)

IT Quaternary ammonium compounds, uses

RL: DEV (Device component use); USES (Uses)

(tetraalkyl; **nonaq. electrolyte** compns.)

IT 67-68-5, DmsO, uses 68-12-2, uses **79-20-9**, Methyl acetate 96-47-9, 2-Methyltetrahydrofuran 96-48-0 96-49-1, Ethylene carbonate **105-54-4**, Ethyl butyrate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate **108-21-4**, Isopropyl acetate 108-32-7, Propylene carbonate 109-94-4, Ethyl formate 110-71-4, Monoglyme **141-78-6**, Acetic acid ethyl ester, uses 338-38-5, Tetrapropylammonium tetrafluoroborate 429-06-1, Tetraethylammonium tetrafluoroborate 429-07-2,

Tetraethylammonium hexafluorophosphate 429-42-5,  
 Tetrabutylammonium tetrafluoroborate 554-12-1, Methyl  
 propionate 558-32-7, Tetramethylammonium hexafluorophosphate  
 616-38-6, Dimethyl carbonate 623-42-7, Methyl butyrate  
 623-53-0, Ethylmethyl carbonate 646-06-0, Dioxolane  
 661-36-9, Tetramethylammonium tetrafluoroborate 872-50-4,  
 n-Methylpyrrolidone, uses 1609-47-8, Diethyl pyrocarbonate  
 1923-70-2, Tetrabutylammonium perchlorate 2537-36-2,  
 Tetramethylammonium perchlorate 2567-83-1, Tetraethylammonium  
 perchlorate 3109-63-5, Tetrabutylammonium hexafluorophosphate  
 4328-09-0, Tetrapentylammonium perchlorate 4525-33-1, Dimethyl  
 pyrocarbonate 6482-34-4, Diisopropyl carbonate 7791-03-9  
 , Lithium perchlorate 10411-26-4, Butyl carbonate 12110-21-3,  
 Tetrapropylammonium hexafluorophosphate 14283-07-9,  
 Lithium tetrafluoroborate 15780-02-6, Tetrapropylammonium  
 perchlorate 16893-80-4, Tetramethylammonium hexafluoroarsenate  
 21324-40-3, Lithium hexafluorophosphate 22505-56-2  
 25628-09-5, Tetramethylammonium triflate 29935-35-1, Lithium  
 hexafluoroarsenate 33454-82-9, Lithium triflate  
 35895-70-6 35925-48-5 43086-15-3, Dicarmonic acid, dipropyl  
 ester 51742-69-9 52089-68-6 56525-42-9, Methyl propyl  
 carbonate 89022-85-5, Tetraethylammonium hexafluoroarsenate  
 90076-65-6 99670-34-5 126434-86-4, Ethanaminium,  
 N,N,N-trimethyl-, salt with trifluoromethanesulfonic acid (1:1)  
 132404-42-3 132843-44-8 156762-86-6 196958-53-9 196958-57-3  
 227098-71-7 227098-72-8 227098-73-9 227098-74-0 227099-53-8  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte compns.)

L52 ANSWER 36 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

1999:380961 Document No. 131:7559 Phosphonate additives for  
**nonaqueous electrolyte** in alkali metal batteries.

Gan, Hong; Takeuchi, Esther S. (Wilson Greatbatch Ltd., USA). Eur.  
 Pat. Appl. EP 917224 A1 19990519, 15 pp. DESIGNATED STATES: R: AT,  
 BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI,  
 LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP  
 1998-308689 19981023. PRIORITY: US 1997-964492 19971105.

AB An alkali metal, solid cathode, **nonaq.** battery capable of  
 delivering high current pulses, rapidly recovering its open circuit  
 voltage and having high current capacity, is disclosed. The stated  
 benefits are realized by the addition of at least one phosphonate  
 additive to an **electrolyte** comprising an alkali metal salt  
 dissolved in a mixture of a low viscosity solvent and a high  
 permittivity solvent. A preferred solvent mixture includes propylene  
 carbonate, dimethoxyethane and an alkyl phosphonate additive.

IT 7439-93-2, Lithium, uses

RL: DEV (Device component use); USES (Uses)

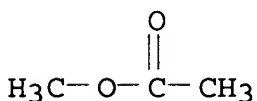
(phosphonate additives for **nonaq. electrolyte**  
in alkali metal batteries)

RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

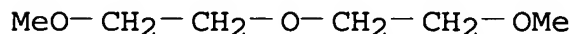
Li

IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
112-49-2, Triglyme 7791-03-9, Lithium perchlorate  
14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
Lithium hexafluorophosphate 33454-82-9, Lithium triflate  
90076-65-6  
RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)  
(phosphonate additives for **nonaq. electrolyte**  
in alkali metal batteries)

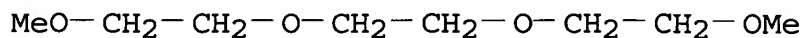
RN 79-20-9 HCAPLUS  
CN Acetic acid, methyl ester (CA INDEX NAME)



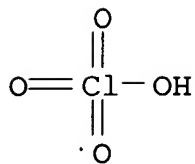
RN 111-96-6 HCAPLUS  
CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS  
CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



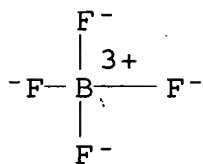
RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

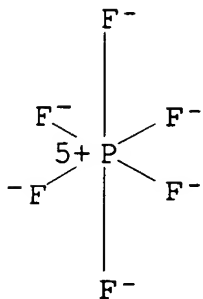
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

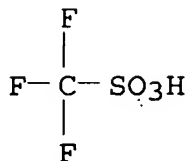
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

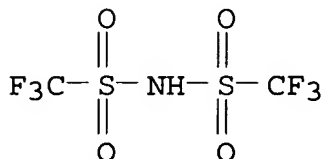


RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-16  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery **electrolyte** additive phosphonate  
 IT Fluoropolymers, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (binder; phosphonate additives for **nonaq. electrolyte** in alkali metal batteries)  
 IT Primary batteries  
 (lithium; phosphonate additives for **nonaq. electrolyte** in alkali metal batteries)  
 IT Battery **electrolytes**  
 (phosphonate additives for **nonaq. electrolyte** in alkali metal batteries)  
 IT Carbon black, uses  
 RL: MOA (Modifier or additive use); USES (Uses)

(phosphonate additives for **nonaq. electrolyte**  
in alkali metal batteries)

IT 1313-13-9, Manganese dioxide, uses 1344-70-3, Copper oxide.  
7439-93-2, Lithium, uses 11099-02-8, Nickel oxide  
11104-61-3, Cobalt oxide 11105-02-5, Silver vanadium oxide  
11126-12-8, Iron sulfide 12039-13-3, Titanium disulfide  
12068-85-8, Iron disulfide 12789-09-2, Copper vanadium oxide  
12798-95-7 51311-17-2, Carbon fluoride 181183-66-4, Copper  
Silver vanadium oxide

RL: DEV (Device component use); USES (Uses)

(phosphonate additives for **nonaq. electrolyte**  
in alkali metal batteries)

IT 67-68-5, DmsO, uses 68-12-2, uses 75-05-8, Acetonitrile, uses  
79-20-9, Methyl acetate 96-48-0 96-49-1, Ethylene  
carbonate 105-58-8, Diethyl carbonate 108-20-3, Diisopropyl  
ether 108-32-7, Propylene carbonate 109-99-9, uses 110-71-4,  
1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2,  
Triglyme 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme  
556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate  
623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate  
629-14-1, 1,2-Diethoxyethane 872-50-4, n-Methylpyrrolidone, uses  
2923-20-8, Lithium perfluoroethanesulfonate 4437-85-8, Butylene  
carbonate 5137-45-1, 1-Ethoxy, 2-methoxyethane 7791-03-9  
, Lithium perchlorate 13453-75-3, Fluorosulfuric acid,  
**lithium salt** 14024-11-4, Lithium  
tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate  
14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium  
tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate  
21324-40-3, Lithium hexafluorophosphate 29935-35-1,  
Lithium hexafluoroarsenate 33454-82-9, Lithium triflate  
35363-40-7, Ethyl propyl carbonate 56525-42-9, Methylpropyl  
carbonate 90076-65-6 115028-88-1 132404-42-3  
225781-62-4

RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)

(phosphonate additives for **nonaq. electrolyte**  
in alkali metal batteries)

IT 683-08-9, Diethyl methylphosphonate 756-79-6, Dimethyl  
methylphosphonate 762-04-9, Diethyl phosphonate 773-47-7,  
Dimethyl benzylphosphonate 868-85-9, Dimethyl phosphonate  
1610-33-9, Ethyl methylphosphonate 1809-19-4, Dibutyl phosphonate  
1809-21-8, Dipropyl phosphonate 2404-73-1, Dibutyl  
methylphosphonate 4712-55-4, Diphenyl phosphonate 6410-56-6,  
Dipropyl methylphosphonate 7429-90-5, Aluminum, uses 7440-02-0,  
Nickel, uses 7440-32-6, Titanium, uses 7526-26-3, Diphenyl  
methylphosphonate 7782-42-5, Graphite, uses 12597-68-1,  
Stainless steel, uses 13598-36-2, Phosphonic acid 17176-77-1,

Dibenzyl phosphonate 19236-58-9, Dibenzyl methylphosphonate  
54963-39-2

RL: MOA (Modifier or additive use); USES (Uses)  
(phosphonate additives for **nonaq. electrolyte**  
in alkali metal batteries)

L52 ANSWER 37 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

1999:344830 Document No. 130:340670 Phosphate additives for  
**nonaqueous electrolyte** in alkali metal  
electrochemical cells. Gan, Hong; Takeuchi, Esther S. (Wilson  
Greatbatch Ltd., USA). Eur. Pat. Appl. EP 918364 A1 19990526, 28  
pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT,  
LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN:  
EPXXDW. APPLICATION: EP 1998-308674 19981023. PRIORITY: US  
1997-974305 19971119.

AB An alkali metal, solid cathode, **nonaq. electrochem. cell**  
capable of delivering high current pulses, rapidly recovering its  
open circuit voltage and having high current capacity, is disclosed.  
The stated benefits are realized by the addition of at least one  
phosphate additive to an **electrolyte** comprising an alkali  
metal salt dissolved in a mixture of a low viscosity solvent and a  
high permittivity solvent. A preferred solvent mixture includes  
propylene carbonate, dimethoxyethane and an alkyl phosphate  
additive.

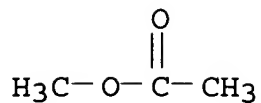
IT 7439-93-2, Lithium, uses  
RL: DEV (Device component use); USES (Uses)  
(phosphate additives for **nonaq. electrolyte**  
in alkali metal electrochem. cells)

RN 7439-93-2 HCAPLUS  
CN Lithium (CA INDEX NAME)

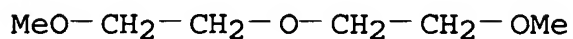
Li

IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
112-49-2, Triglyme 7791-03-9, Lithium perchlorate  
14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
Lithium hexafluorophosphate 33454-82-9, Lithium  
trifluoromethanesulfonate 90076-65-6, Lithium  
bis(trifluoromethanesulfonyl)imide  
RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)  
(phosphate additives for **nonaq. electrolyte**  
in alkali metal electrochem. cells)

RN 79-20-9 HCAPLUS  
CN Acetic acid, methyl ester (CA INDEX NAME)



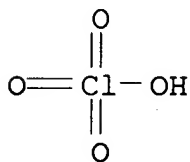
RN 111-96-6 HCAPLUS  
CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS  
CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

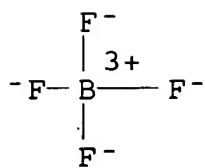


RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



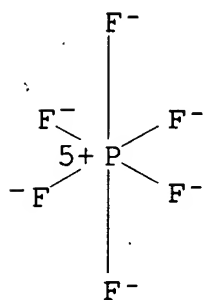
● Li

RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

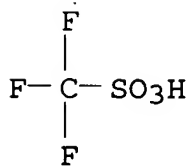
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

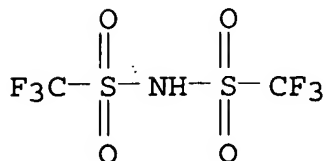
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
 lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40  
 ICS H01M010-44  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery **electrolyte** phosphate additive  
 IT Fluoropolymers, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (binder; phosphate additives for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)  
 IT Primary batteries  
 (lithium; phosphate additives for **nonaq.**  
**electrolyte** in alkali metal electrochem. cells)  
 IT Battery **electrolytes**  
 (phosphate additives for **nonaq. electrolyte**  
 in alkali metal electrochem. cells)  
 IT Carbon black, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (phosphate additives for **nonaq. electrolyte**  
 in alkali metal electrochem. cells)  
 IT 1313-13-9, Manganese dioxide, uses 7439-93-2, Lithium,  
 uses 11099-02-8, Nickel oxide 11104-61-3, Cobalt oxide  
 11105-02-5, Silver vanadium oxide 11115-78-9, Copper sulfide  
 11126-12-8, Iron sulfide 12039-13-3, Titanium disulfide  
 12068-85-8, Iron disulfide 12789-09-2, Copper vanadium oxide  
 12798-95-7 181183-66-4, Copper Silver vanadium oxide  
 RL: DEV (Device component use); USES (Uses)  
 (phosphate additives for **nonaq. electrolyte**  
 in alkali metal electrochem. cells)  
 IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,  
 uses 79-20-9, Methyl acetate 96-48-0;  
 γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8,

Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 872-50-4, n-Methylpyrrolidone, uses 2923-20-8, Ethanesulfonic acid, pentafluoro-, **lithium salt** 4437-85-8, Butylene carbonate 5137-45-1, 1-Ethoxy, 2-methoxyethane 7791-03-9, Lithium perchlorate 13453-75-3, Lithium fluorosulfate 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl propyl carbonate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide 114691-03-1 115028-88-1 132404-42-3

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(phosphate additives for **nonaq. electrolyte** in alkali metal electrochem. cells)

IT 107-66-4, Dibutyl phosphate 598-02-7, Diethyl phosphate 701-64-4, Monophenyl phosphate 812-00-0, Monomethyl phosphate 813-78-5, Dimethyl phosphate 838-85-7, Diphenyl phosphate 884-90-2, Phosphoric acid, diethyl phenylmethyl ester 1623-06-9, Monopropyl phosphate 1623-08-1, Dibenzyl phosphate 1623-14-9, Monoethyl phosphate 1623-15-0, Monobutyl phosphate 1707-92-2, Tribenzyl phosphate 1804-93-9, Dipropyl phosphate 3066-75-9, Phosphoric acid, diethyl 2-propenyl ester 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6, Titanium, uses 7440-44-0, Carbon, uses 7748-09-6, Diallyl phosphate 7782-42-5, Graphite, uses 10497-05-9, Tris(trimethylsilyl)phosphate 12597-68-1, Stainless steel, uses 28519-15-5, Phosphoric acid, benzyl Dibutyl ester 32636-65-0 66325-71-1 67293-73-6, Phosphoric acid, dimethyl phenylmethyl ester

RL: MOA (Modifier or additive use); USES (Uses)

(phosphate additives for **nonaq. electrolyte** in alkali metal electrochem. cells)

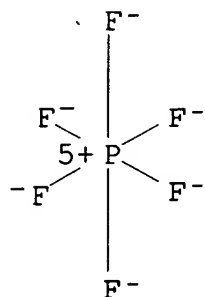
L52 ANSWER 38 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

1999:89700 Document No. 130:112660 New **nonaqueous**

**electrolyte** for improved performance and stability of high energy-density alkali metal battery. Takeuchi, Esther S.; Thiebolt, William C., III (Wilson Greatbatch Ltd., Australia). Pat. Specif. (Aust.) AU 693820 B2 19980709, 31 pp. (English). CODEN: ALXXAP.

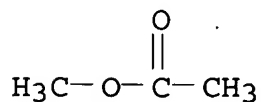
APPLICATION: AU 1994-80493 19941216. PRIORITY: US 1993-169022  
19931220.

- AB The **electrolyte** suitable for use with a Li/Ag-V oxide battery comprises an ion-forming alkali metal hexafluorophosphate, such as LiPF<sub>6</sub> salt dissolved in a **nonaq.** solvent. This **electrolyte** exhibits markedly improved reactivity characteristics with the Li anode material and has improved passivation properties that decrease and in some cases even eliminate the phenomenon of voltage delay.
- IT 21324-40-3, Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(**nonaq.** battery **electrolytes** containing)
- RN 21324-40-3 HCAPLUS
- CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



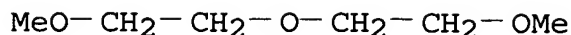
● Li<sup>+</sup>

- IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
112-49-2, Triglyme  
RL: TEM (Technical or engineered material use); USES (Uses)  
(**nonaq.** battery **electrolytes** containing)
- RN 79-20-9 HCAPLUS
- CN Acetic acid, methyl ester (CA INDEX NAME)



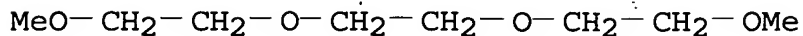
- RN 111-96-6 HCAPLUS
- CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)





RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM H01M006-14

ICS H01M010-26

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST alkali metal battery **nonaq electrolyte**; lithium hexafluorophosphate **nonaq electrolyte** battery

IT Battery **electrolytes**

(lithium hexafluorophosphate **nonaq.**)

IT 108-32-7, Propylene carbonate 110-71-4, DME 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(**nonaq.** battery **electrolytes** containing)

IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Dimethyl formamide, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate

96-49-1, Ethylene carbonate 111-96-6, Diglyme

112-49-2, Triglyme 127-19-5, Dimethyl acetamide

143-24-8, Tetraglyme

RL: TEM (Technical or engineered material use); USES (Uses)

(**nonaq.** battery **electrolytes** containing)

L52 ANSWER 39 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

1997:15533 Document No. 126:92114 High pulse power battery. Takeuchi, Esther S.; Walsh, Karen M. (Wilson Greatbatch Ltd., USA). U.S. US 5580683 A 19961203, 46 pp., Cont.-in-part of U.S. 5,435,874.

(English). CODEN: USXXAM. APPLICATION: US 1994-340669 19941116.

PRIORITY: US 1993-146707 19931101; US 1993-169002 19931220.

AB The battery comprises an alkali metal-Al alloy anode, a Ni anode current collector, a calendared mixed metal oxide cathode active material pressed on an Al cathode current collector, and a

**nonaq. electrolyte**. The **electrolyte**

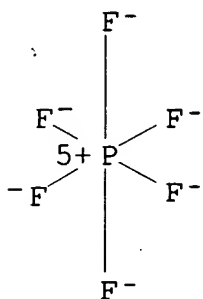
solution preferably comprises  $\geq 1$  ion-forming alkali metal salt of hexafluorophosphate with the alkali metal of the salt being similar to the alkali metal comprising the anode. Li is the preferred alkali metal. This battery system produces high current pulses and can be housed in a casing having a smaller volume with respect to conventional electrochem. systems. Addnl., the anode/**electrolyte** solution exhibits decreased voltage delay without

comprising heat dissipation.

IT 7439-93-2, Lithium, uses  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (anode of high pulse power lithium battery)  
 RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

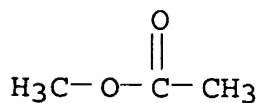
Li

IT 21324-40-3, Lithium hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (high pulse power lithium battery **electrolyte** containing)  
 RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



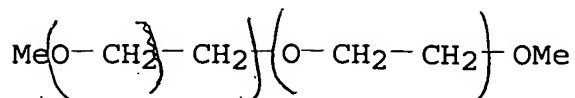
● Li<sup>+</sup>

IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
 112-49-2, Triglyme  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (high pulse power lithium battery **electrolyte** containing)  
 RN 79-20-9 HCAPLUS  
 CN Acetic acid, methyl ester (CA INDEX NAME)



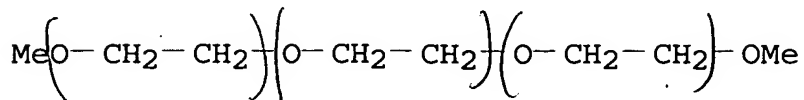
RN 111-96-6 HCAPLUS

CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS

CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM H01M006-14

ICS H01M004-54; H01M004-66

INCL 429194000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST alkali metal high pulse power battery; mixed metal oxide lithium battery; aluminum cathode current collector lithium battery; nickel anode current collector lithium battery; oxide mixed metal lithium battery

IT 7439-93-2, Lithium, uses 12798-95-7

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(anode of high pulse power lithium battery)

IT 21324-40-3, Lithium hexafluorophosphate 29935-35-1,  
Lithium hexafluoroarsenate

RL: DEV (Device component use); USES (Uses)  
(high pulse power lithium battery electrolyte containing)

IT 67-68-5, uses 68-12-2, uses 75-05-8, Acetonitrile, uses  
79-20-9, Methyl acetate 96-49-1, Ethylene carbonate  
108-32-7, Propylene carbonate 109-99-9, THF, uses 110-71-4,  
1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2,  
Triglyme 127-19-5 143-24-8, Tetraglyme

RL: TEM (Technical or engineered material use); USES (Uses)  
(high pulse power lithium battery electrolyte containing)

L52 ANSWER 40 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

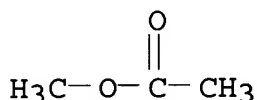
1995:726304 Document No. 123:118595 **Nonaqueous** battery

**electrolyte** containing alkali metal hexafluorophosphate for improved performance and stability.. Thiebolt, William C.; Takeuchi, Esther S.; Walsh, Karen M. (Wilson Greatbatch Ltd., USA). Eur. Pat. Appl. EP 662729 A1 19950712, 15 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1994-309556 19941220. PRIORITY: US 1993-169002 19931220.

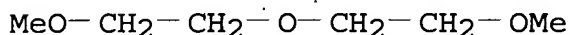
AB The new **electrolyte** is suitable for use in a Li/Ag-V oxide battery. The ion-forming alkali metal hexafluorophosphate, such as

LiPF<sub>6</sub> is dissolved in a **nonaq.** solvent. This **electrolyte** exhibits markedly improved reactivity characteristics with the Li anode material and has improved passivation properties that decrease and in some cases even eliminate the phenomenon of voltage delay.

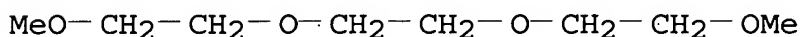
IT 79-20-9, Methyl acetate 111-96-6, Diglyme  
112-49-2, Triglyme  
RL: NUU (Other use, unclassified); USES (Uses)  
(**nonaq.** battery **electrolyte** containing alkali  
metal hexafluorophosphate and)  
RN 79-20-9 HCAPLUS  
CN Acetic acid, methyl ester (CA INDEX NAME)



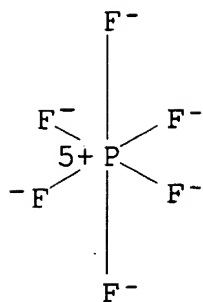
RN 111-96-6 HCAPLUS  
CN Ethane, 1,1'-oxybis[2-methoxy- (9CI) (CA INDEX NAME)



RN 112-49-2 HCAPLUS  
CN 2,5,8,11-Tetraoxadodecane (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT 21324-40-3, Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(**nonaq.** battery **electrolyte** containing alkali  
metal hexafluorophosphate for improved performance and stability)  
RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



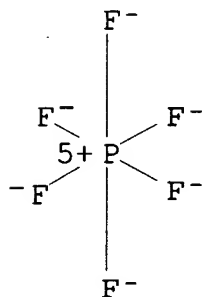
● Li<sup>+</sup>

IC ICM H01M006-16  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery **nonaq electrolyte** lithium hexafluorophosphate  
 IT Battery **electrolytes**  
     (**nonaq.** containing alkali metal hexafluorophosphate for improved performance and stability)  
 IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Dimethyl formamide, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 109-99-9, THF, uses 110-71-4, DME 111-96-6, Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide 143-24-8, Tetraglyme  
 RL: NUU (Other use, unclassified); USES (Uses)  
     (**nonaq.** battery **electrolyte** containing alkali metal hexafluorophosphate and)  
 IT 16940-81-1D, Hydrogen hexafluorophosphate, alkali metal salt 21324-40-3, Lithium hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
     (**nonaq.** battery **electrolyte** containing alkali metal hexafluorophosphate for improved performance and stability)  
 IT 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide, uses 11104-61-3, Cobalt oxide 11105-02-5, Silver vanadium oxide  
 RL: TEM (Technical or engineered material use); USES (Uses)  
     (**nonaq. electrolyte** for batteries with cathodes of)

L52 ANSWER 41 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN  
 1992:554505 Document No. 117:154505 **Nonaqueous-electrolyte** batteries with improved solvent mixtures.  
 Takahashi, Masatoshi; Yoshimura, Seiji; Furukawa, Sanehiro (Sanyo

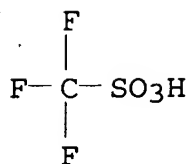
Denki K. K., Japan). Jpn. Kokai Tokkyo Koho JP 04095362 A 19920327  
Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
1990-203364 19900731.

- AB The batteries use F-containing **Li salt electrolytes** dissolved in organic solvent mixts. containing  $\geq 1$  cyclic carbonate esters and  $\geq 2$  low-b.p. solvents. Preferably, the carbonate esters are selected from ethylene carbonate, propylene carbonate, butylene carbonate, and vinylene carbonate, and the low-b. p. solvents are selected from MeOC<sub>2</sub>H<sub>4</sub>OMe, EtOC<sub>2</sub>H<sub>4</sub>OMe, dioxolan, 4-methyldioxolan, 2-methyldioxolan, THF, 2-methyltetrahydrofuran, Me formate, and Me acetate. Li/MnO<sub>2</sub> batteries using these **electrolyte** solns. have good high-rate discharge performance and long cycle life.
- IT **21324-40-3 33454-82-9**  
RL: USES (Uses)  
(**electrolyte**, solvent mixts. for, in secondary lithium/manganese dioxide batteries)
- RN 21324-40-3 HCAPLUS
- CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

- RN 33454-82-9 HCAPLUS
- CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 79-20-9, Methyl acetate 646-06-0, Dioxolan

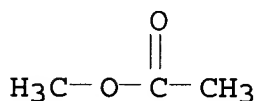
1072-47-5

RL: USES (Uses)

(solvent mixts. contg, for fluorine-containing **lithium salt electrolytes**, in secondary lithium/manganese dioxide batteries)

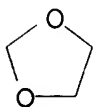
RN 79-20-9 HCAPLUS

CN Acetic acid, methyl ester (CA INDEX NAME)



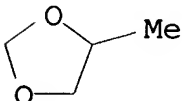
RN 646-06-0 HCAPLUS

CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 1072-47-5 HCAPLUS

CN 1,3-Dioxolane, 4-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery **electrolyte** solvent mixt  
IT Battery **electrolytes**  
    (fluorine-containing **lithium salts**, solvent  
    mixts. contg cyclic carbonate esters and low-b.p. solvents for)  
IT 1313-13-9, Manganese dioxide, uses  
RL: USES (Uses)  
    (battery cathode, with **nonaq. electrolytes**  
    containing fluorine-containing **lithium salt** solutes  
    and cyclic carbonic acid esters and low-b.p. solvents)  
IT **21324-40-3 33454-82-9**  
RL: USES (Uses)  
    (**electrolyte**, solvent mixts. for, in secondary  
    lithium/manganese dioxide batteries)  
IT **79-20-9**, Methyl acetate 96-47-9, 2-Methyltetrahydrofuran  
96-49-1, Ethylene carbonate 107-31-3, Methyl formate 108-32-7,  
Propylene carbonate 109-99-9, Tetrahydrofuran, uses 110-71-4,  
1,2-Dimethoxyethane 497-26-7 **646-06-0**, Dioxolan  
872-36-6, Vinylene carbonate **1072-47-5** 4437-85-8,  
Butylene carbonate 5137-45-1  
RL: USES (Uses)  
    (solvent mixts. contg, for fluorine-containing **lithium**  
    **salt electrolytes**, in secondary  
    lithium/manganese dioxide batteries)

=&gt;



Requests IV and V hit zero answers. The flowing hits were from  
"lithium salt + dimethyl malonate".

=> d 153 cbib abs hitstr hitind 1-28

L53 ANSWER 1 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
2005:141448 Document No. 142:243601 Secondary lithium battery and its  
nonaqueous electrolyte solution. Abe, Koji; Miyoshi, Kazuhiro;  
Kuwata, Takaaki; Matsumori, Yasuo (Ube Industries, Ltd., Japan).  
PCT Int. Appl. WO 2005015677 A1 20050217, 36 pp. DESIGNATED STATES:  
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,  
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM,  
PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ,  
CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU,  
MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Japanese). CODEN:  
PIXXD2. APPLICATION: WO 2004-JP11714 20040809. PRIORITY: JP  
2003-291129 20030811; JP 2003-383406 20031113.

AB The battery comprised a cathode, an anode, and a nonaq. electrolyte  
solution having an electrolyte salt dissolved in a nonaq. solvent  
mixture; where the cathode is a Li composite oxide containing material,  
the anode is a graphite containing material; and the electrolyte  
solution

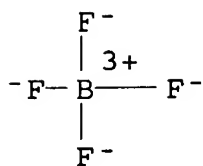
contains a dialkyl oxalate and a vinylene carbonate and/or  
1,3-propane sultone.

IT **14283-07-9**, Lithium tetrafluoroborate **21324-40-3**,  
Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)  
(electrolyte solns. containing dialkyl oxalates and vinylene  
carbonate and/or 1,3-propane sultone for secondary lithium  
batteries)

RN 14283-07-9 HCAPLUS

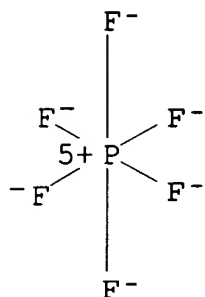
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

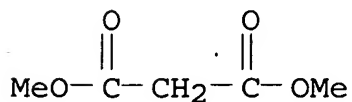
IT 108-59-8, Dimethyl malonate

RL: MOA (Modifier or additive use); USES (Uses)

(electrolyte solns. containing dialkyl oxalates and vinylene carbonate and/or 1,3-propane sultone for secondary lithium batteries)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)

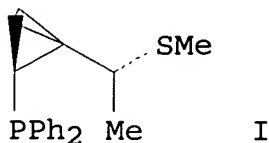


IC ICM H01M010-40

ICS H01M004-58; H01M004-02  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate  
616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate  
7782-42-5, Graphite, uses 12057-17-9, Lithium manganese oxide  
( $\text{LiMn}_2\text{O}_4$ ) 12190-79-3, Cobalt lithium oxide ( $\text{CoLiO}_2$ )  
14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(electrolyte solns. containing dialkyl oxalates and vinylene  
carbonate and/or 1,3-propane sultone for secondary lithium  
batteries)  
IT 108-59-8, Dimethyl malonate 553-90-2, Dimethyl oxalate  
615-52-1, Methyl ethyl oxalate 872-36-6, Vinylene carbonate,  
1120-71-4, 1,3-Propane sultone 2050-60-4, Dibutyl oxalate  
5132-19-4 20602-87-3, Dihexyl oxalate 20760-45-6, Dioctyl  
oxalate 61764-71-4, Methyl propargyl carbonate 841302-60-1  
841302-61-2 841302-62-3  
RL: MOA (Modifier or additive use); USES (Uses)  
(electrolyte solns. containing dialkyl oxalates and vinylene  
carbonate and/or 1,3-propane sultone for secondary lithium  
batteries)

L53 ANSWER 2 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
2004:861117 Document No. 142:74316 Synthesis and Application of Chiral  
Cyclopropane-Based Ligands in Palladium-Catalyzed Allylic  
Alkylation. Molander, Gary A.; Burke, Jason P.; Carroll, Patrick J.  
(Roy and Diana Vagelos Laboratories, Department of Chemistry,  
University of Pennsylvania, Philadelphia, PA, 19104-6323, USA).  
Journal of Organic Chemistry, 69(23), 8062-8069 (English) 2004.  
CODEN: JOCEAH. ISSN: 0022-3263. OTHER SOURCES: CASREACT 142:74316.  
Publisher: American Chemical Society.

GI



AB A series of chiral, cyclopropane-based phosphorus/sulfur ligands  
have been synthesized and evaluated in the palladium-catalyzed  
allylic alkylation of 1,3-diphenylpropenyl acetate with di-Me  
malonate. Variation of the ligand substituents at phosphorus,

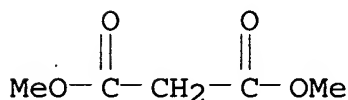
sulfur, and the carbon backbone revealed [2-[(1R)-1-(methylthio)ethyl]cyclopropyl]diphenylphosphine (I) to have the optimal configuration for this reaction, giving the product in high yield and with good enantioselectivity (93%). A model for the observed enantioselectivity is discussed within the context of existing models, using X-ray crystallog. data, solution-phase NMR studies, and the absolute stereochem. of the products. Selected ligands were also evaluated in the palladium-catalyzed intermol. Heck reaction and the rhodium-catalyzed hydrogenation of a dehydroamino acid.

IT 108-59-8

RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of [di(phenyl)propenyl]propanedioic ester by palladium-catalyzed allylic alkylation of propanedioate with  $\alpha$ -[(phenyl)ethenyl]benzenemethanol acetate using [[(thio)cyclopropyl]methyl]- or [(thiomethyl)cyclopropyl]phosphine as ligands)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



CC 25-18 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
Section cross-reference(s): 24, 29, 34, 75

IT 108-59-8 87751-69-7,  $\alpha$ -[(1E)-2-Phenylethenyl]benzenemethanol acetate

RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of [di(phenyl)propenyl]propanedioic ester by palladium-catalyzed allylic alkylation of propanedioate with  $\alpha$ -[(phenyl)ethenyl]benzenemethanol acetate using [[(thio)cyclopropyl]methyl]- or [(thiomethyl)cyclopropyl]phosphine as ligands)

IT 4541-02-0, Diphenylphosphine lithium salt  
52745-75-2

RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of chiral

[cyclopropanediylbis(methylene)]bis[diphenylphosphine] using cyclopropanedimethanol and diphenylphosphine lithium salt as starting materials)

L53 ANSWER 3 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

2004:203810 Document No. 140:235612 Preparation of dihydropyridinones as human neutrophil elastase (HNE) inhibitors. Gielen, Heike; Li, Volkhart Min-Jian; Rosentreter, Ulrich; Schlemmer, Karl-Heinz;

Allerheiligen, Swen; Telan, Leila; Baerfacker, Lars; Keldenich, Joerg; Fitzgerald, Mary F.; Nash, Kevin; Albrecht, Barbara; Meurer, Dirk (Bayer Healthcare A.-G., Germany). PCT Int. Appl. WO 2004020410 A2 20040311, 166 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2003-EP9108 20030818. PRIORITY: GB 2002-19894 20020827; GB 2002-21143 20020912.

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Title compds. I [wherein A = hetero/aryl; R1, R2, R3 = independently H, halo, NO<sub>2</sub>, CN, CF<sub>3</sub>, OCF<sub>3</sub>, (un)substituted alkyl, OH and derivs., R4 = alkenoxycarbonyl, hydroxycarbonyl, CN, (un)substituted alkylcarbonyl, alkoxycarbonyl, alkyl/cycloalkyl/N-(heterocyclyl)/mono/di/aminocarbonyl; R5 = alkyl; R6 = H, CN, cycloalkyl/alkyl/aminocarbonyl, cycloalkylcarbonyl, arylcarbonyl, hydroxycarbonyl, alkenoxycarbonyl, aryloxycarbonyl, (un)substituted mono/di/aryl/aminocarbonyl, alkylcarbonyl, alkoxycarbonyl, or R6 = 4-carboxylpiperazinyl and derivs., 4-carboxylmorpholinyl, etc.; R7 = H, halo, NO<sub>2</sub>, CN, CF<sub>3</sub>, OCF<sub>3</sub>, (un)substituted alkyl, alkoxy; Y1, Y2, Y3, Y4, Y5 = independently CH or N; and their salts, hydrates, and/or solvates, and their tautomeric forms] were prepared as human neutrophil elastase (HNE) inhibitors. For example, II was prepared by cyclocondensation of III (preparation given) with 4-formylbenzonitrile and 2-cyanoacetamide in the presence of EtOH/piperidine, followed by reaction with water in acetic acid. In an in vitro assay, I inhibited HNE with IC<sub>50</sub> values within the range of 5 nM - 5  $\mu$ M. Thus, I are useful for treatment of chronic obstructive pulmonary diseases, acute coronary syndrome, acute myocardial infarction and heart failure development.

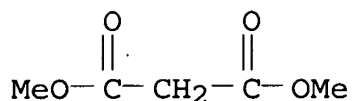
IT 108-59-8, Dimethyl malonate

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of dihydropyridinones as human neutrophil elastase inhibitors)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



IC ICM C07D211-00  
 CC 27-16 (Heterocyclic Compounds (One Hetero Atom))  
 Section cross-reference(s): 1, 63  
 IT 1620-77-5P, 5-Methyl-2-pyridinecarbonitrile 10174-67-1P  
 15386-86-4P, Ethyl 3-oxo-3-[[3-(trifluoromethyl)phenyl]amino]propanoate 18269-12-0P, Ethyl 2-cyano-3-(4-cyanophenyl)-2-propenoate 49680-09-3P, 3-[(3-Chlorophenyl)amino]-2-butenenitrile 49680-10-6P, 3-[(3-Methylphenyl)amino]-2-butenenitrile 58553-48-3P, 5-(Hydroxymethyl)-2-pyridinecarbonitrile 71510-95-7P 71940-34-6P, Ethyl 3-[[3-(trifluoromethyl)phenyl]amino]-2-butenate 72038-50-7P 93098-69-2P, Dimethyl 2-(4-cyanobenzylidene)malonate 112110-07-3P, 5-(Trifluoromethyl)-3-pyridinamine 131747-68-7P, 5-Formyl-2-pyridinecarbonitrile 159971-03-6P, Ethyl 3-(4-methyl-1-piperazinyl)-3-oxopropanoate 174132-33-3P, 4-[(2,2-Dimethyl-4,6-dioxo-1,3-dioxan-5-ylidene)methyl]benzonitrile 184169-01-5P 191089-75-5P, 4-[[3-(Trifluoromethyl)phenyl]amino]-3-penten-2-one 327105-39-5P, 3-[[3-(Trifluoromethyl)phenyl]amino]-2-butenenitrile 548459-45-6P, Ethyl 5-acetyl-2-amino-4-(4-cyanophenyl)-6-methyl-1-[3-(trifluoromethyl)phenyl]-1,4-dihydro-3-pyridinecarboxylate 556809-97-3P, 5-Acetyl-2-amino-4-(4-cyanophenyl)-6-methyl-1-[3-(trifluoromethyl)phenyl]-1,4-dihydro-3-pyridinecarboxamide 612838-35-4P 612838-36-5P 668996-61-0P, Diethyl 2-amino-4-(4-cyanophenyl)-6-methyl-1-[3-(trifluoromethyl)phenyl]-1,4-dihydro-3,5-pyridinedicarboxylate 668996-63-2P, 2-Amino-5-cyano-4-(4-cyanophenyl)-6-methyl-1-[3-(trifluoromethyl)phenyl]-1,4-dihydro-3-pyridinecarboxamide 668996-64-3P, Ethyl 6-amino-5-(aminocarbonyl)-4-(4-cyanophenyl)-2-methyl-1-[3-(trifluoromethyl)phenyl]-1,4-dihydro-3-pyridinecarboxylate 668996-65-4P, Ethyl 2-amino-5-cyano-4-(4-cyanophenyl)-6-methyl-1-[3-(trifluoromethyl)phenyl]-1,4-dihydro-3-pyridinecarboxylate 668996-71-2P, Ethyl 4-(4-cyanophenyl)-5-[(dimethylamino)carbonyl]-6-imino-2-methyl-1-[3-(trifluoromethyl)phenyl]-1,4,5,6-tetrahydro-3-pyridinecarboxylate 668996-95-0P 668996-99-4P 668997-01-1P, Ethyl 6-amino-5-cyano-4-(4-cyanophenyl)-2-methyl-1-[3-(trifluoromethyl)phenyl]-1,4-dihydro-3-pyridinecarboxylate 668997-05-5P 668997-72-6P, (1R)-2-Methoxy-1-methyl-2-oxoethyl 3-oxobutanoate 668997-80-6P 668999-89-1P, 5-Acetyl-4-(4-cyanophenyl)-2-imino-N,N-dimethyl-6-methyl-1-[3-(trifluoromethyl)phenyl]-1,2,3,4-tetrahydro-3-pyridinecarboxamide

668999-90-4P, 5-Cyano-4-(4-cyanophenyl)-2-imino-N,N-dimethyl-6-methyl-1-[3-(trifluoromethyl)phenyl]-1,2,3,4-tetrahydro-3-pyridinecarboxamide 668999-91-5P 668999-92-6P, Ethyl 3-[(2-methoxyethyl)amino]-3-oxopropanoate 668999-93-7P, Ethyl 3-[(3-tert-butoxy-3-oxopropyl)amino]-3-oxopropanoate 668999-94-8P 668999-95-9P 668999-96-0P 668999-97-1P 668999-98-2P, Ethyl 3-oxo-3-[[5-(trifluoromethyl)-3-pyridinyl]amino]propanoate 668999-99-3P, Ethyl (2Z)-2-acetyl-3-(4-cyanophenyl)-2-propenoate 669000-00-4P, Diethyl 2-acetyl-3-(4-cyanophenyl)-4-[[[5-(trifluoromethyl)-3-pyridinyl]amino]carbonyl]pentanedioate 669000-01-5P, 3-Oxo-3-[[3-(trifluoromethyl)phenyl]amino]propanoic acid **lithium salt** 669000-02-6P, 3-Oxo-3-(1-pyrrolidinyl)-N-[3-(trifluoromethyl)phenyl]propanamide 669000-03-7P, Ethyl 2-acetyl-3-(4-cyanophenyl)-5-oxo-5-(1-pyrrolidinyl)-4-[[[3-(trifluoromethyl)phenyl]amino]carbonyl]pentanoate 669000-04-8P, N-(2-Methoxyethyl)-N-methyl-N'-[3-(trifluoromethyl)phenyl]malonamide 669000-05-9P, Ethyl 2-acetyl-3-(4-cyanophenyl)-5-[(2-methoxyethyl)(methyl)amino]-5-oxo-4-[[[3-(trifluoromethyl)phenyl]amino]carbonyl]pentanoate 669000-06-0P, N,N-Diethyl-N'-[3-(trifluoromethyl)phenyl]malonamide 669000-07-1P, Ethyl 2-acetyl-3-(4-cyanophenyl)-5-(diethylamino)-5-oxo-4-[[[3-(trifluoromethyl)phenyl]amino]carbonyl]pentanoate 669000-08-2P, 3-(4-Morpholinyl)-3-oxo-N-[3-(trifluoromethyl)phenyl]propanamide 669000-09-3P, Ethyl 2-acetyl-3-(4-cyanophenyl)-5-(4-morpholinyl)-5-oxo-4-[[[3-(trifluoromethyl)phenyl]amino]carbonyl]pentanoate 669000-10-6P, 3-Oxo-3-(1,3-thiazolidin-3-yl)-N-[3-(trifluoromethyl)phenyl]propanamide 669000-11-7P, Ethyl 2-acetyl-3-(4-cyanophenyl)-5-oxo-5-(1,3-thiazolidin-3-yl)-4-[[[3-(trifluoromethyl)phenyl]amino]carbonyl]pentanoate 669000-12-8P, 3-(4-Methyl-1-piperazinyl)-3-oxopropanoic acid **lithium salt** 669000-13-9P, 3-(4-Methyl-1-piperazinyl)-3-oxo-N-[3-(trifluoromethyl)phenyl]propanamide 669000-14-0P, Ethyl 2-acetyl-3-(4-cyanophenyl)-5-(4-methyl-1-piperazinyl)-5-oxo-4-[[[3-(trifluoromethyl)phenyl]amino]carbonyl]pentanoate 669000-15-1P, Allyl 2-acetyl-3-(4-cyanophenyl)-5-oxo-5-[[[3-(trifluoromethyl)phenyl]amino]pentanoate 669000-16-2P, Ethyl 4-(4-chlorophenyl)-2-methyl-6-oxo-1-[3-(trifluoromethyl)phenyl]-1,4,5,6-tetrahydro-3-pyridinecarboxylate 669000-17-3P 669000-18-4P 669000-19-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(intermediate; preparation of dihydropyridinones as human neutrophil elastase inhibitors)

IT 78-81-9, Isobutylamine 89-97-4, 2-Chlorobenzylamine 89-99-6, 2-Fluorobenzylamine 98-16-8, 3-Trifluoromethylaniline 105-07-7, 4-Cyanobenzaldehyde 105-53-3, Diethyl malonate 105-56-6, Ethyl cyanoacetate 107-91-5, 2-Cyanoacetamide 108-00-9 108-01-0,

2-(Dimethylamino)ethanol 108-42-9, 3-Chloroaniline 108-44-1, 3-Methylaniline, reactions 108-59-8, Dimethyl malonate 109-01-3, 1-Methylpiperazine 109-77-3, Malononitrile 109-85-3, 2-Methoxyethylamine 109-89-7, Diethylamine, reactions 110-70-3, N, N'-Dimethylethane-1,2-diamine 110-91-8, Morpholine, reactions 123-75-1, Pyrrolidine, reactions 141-97-9, Ethyl acetoacetate 142-26-7, N-(2-Hydroxyethyl)acetamide 555-16-8, 4-Nitrobenzaldehyde, reactions 765-30-0, Cyclopropylamine 1118-61-2, 3-Aminocrotonitrile 1118-84-9, Allyl 3-oxobutanoate 1122-91-4, 4-Bromobenzaldehyde 2033-24-1, 2,2-Dimethyl-1,3-dioxane-4,6-dione 2038-03-1, [2-(Morpholin-4-yl)ethyl]amine 2627-86-3, (1S)-Phenylethylamine 2955-88-6, 1-(2-Hydroxyethyl)pyrrolidine 3510-66-5, 2-Bromo-5-methylpyridine 3886-69-9 4023-34-1, Cyclo-propylcarbonyl chloride 4285-42-1, N-Methyl-N-phenylcarbonyl chloride 5325-93-9, Cyanoethyl acetate 5332-73-0, 3-Methoxypropylamine 6456-74-2 7391-40-4, 2-Cyano-N,N-dimethylacetamide 7597-56-0, Malonamic acid ethyl ester 13404-22-3 13952-84-6, sec-Butylamine 14446-47-0, Thiazolidine hydrochloride 17344-99-9 17392-83-5, Methyl (2R)-2-hydroxypropanoate 19009-39-3, Diisopropylcarbonyl chloride 27609-91-2, 4-Cyano-2-methylbenzaldehyde 36239-09-5, Ethyl 3-chloro-3-oxopropanoate 38256-93-8, (2-Methoxyethyl)methylamine 50541-93-0, (1-Benzylpiperidin-4-yl)amine 51513-29-2, Methyl 3-amino-3-oxopropanoate 52070-13-0, Ethyl 3-(ethylamino)-3-oxopropanoate 52721-69-4, 2-(2-Fluorophenyl)ethylamine 58314-71-9, 4-Acetylpiperazine-1-carbonyl chloride 58620-93-2, tert-Butyl  $\beta$ -alaninate hydrochloride 84102-82-9, 2-Formyl-1-benzofuran-5-carbonitrile 85148-26-1, 3-Chloro-5-(trifluoromethyl)pyridine 95602-71-4, (2E)-3-(4-Chlorophenyl)-2-propenoyl chloride 101711-55-1, 2-(tert-Butyldimethylsilyloxy)ethylamine 548459-41-2, Ethyl (2E)-3-[[3-(trifluoromethyl)phenyl]amino]-2-butenate 669000-20-8, Methyl 3-[(4-bromophenyl)amino]-3-oxopropanoate

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of dihydropyridinones as human neutrophil elastase inhibitors)

L53 ANSWER 4 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

2002:962382 Document No. 138:58890 Electrolyte and secondary battery. Shizuka, Kenji; Okahara, Kenji; Shima, Kunihisa (Mitsubishi Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2002367674 A 20021220, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-175182 20010611.

AB The electrolyte solution has a Li salt dissolved in a solvent mixture containing  $\geq 1$  nonaq. solvent selected from carbonate esters, ethers and/or lactones; a dicarboxylate diester of the formula  $R1O2(CH2)nO2R2$  or  $R3O2(CH2)pCH:CH(CH2)qO2R4$  (excluding



succinate diesters) [R1-R4 = C1-10 alkyl or halogen substituted alkyl; n = an integer from 0-1 and 3-10; p and q = an integer from 0-5; and  $0 \leq (p+q) \leq 10$ ], or a derivative thereof; and an aromatic compound of the formula C6R1R2R3R4R5R6 or R1OC6R2R3R4R5R6

[R1-R6

= H, halogen, C1-10 chain alkyl, C4-10 cyclic alkyl, or (substituted) phenyl], having mol. weight  $\leq 500$ . The battery has the above electrolyte solution, a cathode containing a Li transition metal oxide, and a carbonaceous anode.

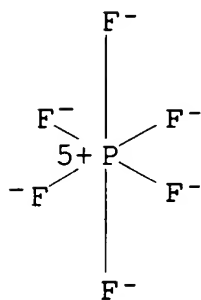
IT 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolyte solns. containing dicarboxylate diesters and aromatic compds. with controlled mol. weight for secondary lithium batteries)

RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

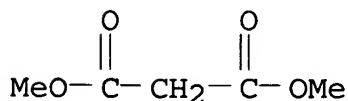
IT 108-59-8, Dimethyl malonate

RL: MOA (Modifier or additive use); USES (Uses)

(electrolyte solns. containing dicarboxylate diesters and aromatic compds. with controlled mol. weight for secondary lithium batteries)

RN 108-59-8 HCAPLUS

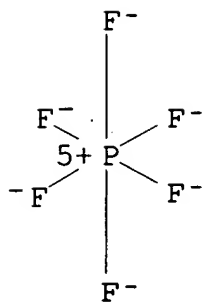
CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



IC ICM H01M010-40

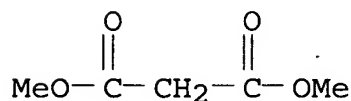
ICS H01M004-02; H01M004-58

- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
21324-40-3, Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(electrolyte solns. containing dicarboxylate diesters and aromatic  
comps. with controlled mol. weight for secondary lithium batteries)
- IT 95-92-1, Diethyl oxalate 108-59-8, Dimethyl malonate  
132-64-9, Dibenzofuran 872-36-6, Vinylene carbonate  
RL: MOA (Modifier or additive use); USES (Uses)  
(electrolyte solns. containing dicarboxylate diesters and aromatic  
comps. with controlled mol. weight for secondary lithium batteries)
- L53 ANSWER 5 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN
- 2002:962381 Document No. 138:58889 Electrolyte and secondary battery..  
Shizuka, Kenji; Okahara, Kenji; Shima, Kuniyoshi (Mitsubishi Chemical  
Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2002367673 A 20021220, 8  
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-170704  
20010606.
- AB The electrolyte solution has a **Li salt** dissolved in  
a solvent mixture containing  $\geq 1$  nonaq. solvent selected from  
carbonate esters, ethers and/or lactones; and a dicarboxylate  
diester of the formula  $R1O2(CH2)nO2R2$  (I) or  
 $R3O2(CH2)pCH:CH(CH2)qO2R4$  (II) (excluding oxalate diesters and  
succinate diesters) [ $R1-R4$  = C1-10 alkyl or halogen substituted  
alkyl;  $n$  = an integer from 3-10;  $p$  and  $q$  = an integer from 0-5; and  
 $0 \leq (p+q) \leq 10$ ], or derivs. thereof; where the content  
of I, II, or their derivs. is 0.1-5 % of the solvent mixture. The  
battery has the above electrolyte solution, a cathode containing a  
**Li transition metal oxide**, and a carbonaceous  
anode.
- IT 21324-40-3, Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(electrolyte solns. containing dicarboxylate diesters with controlled  
amts. for secondary lithium batteries)
- RN 21324-40-3 HCAPLUS
- CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

IT 108-59-8, Dimethyl malonate  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (electrolyte solns. containing dicarboxylate diesters with controlled  
 amts. for secondary lithium batteries)  
 RN 108-59-8 HCAPLUS  
 CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 21324-40-3, Lithium hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte solns. containing dicarboxylate diesters with controlled  
 amts. for secondary lithium batteries)  
 IT 105-53-3, Diethyl malonate 108-59-8, Dimethyl malonate  
 623-91-6, Diethyl fumarate  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (electrolyte solns. containing dicarboxylate diesters with controlled  
 amts. for secondary lithium batteries)

L53 ANSWER 6 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2001:777152 Document No. 135:291430 Organic electrolyte for lithium  
 second cell and lithium second cell. Doo, Suk Kwang (Samsung  
 Electronics Co., Ltd., S. Korea). Repub. Korean Kongkae Taeho  
 Kongbo KR 2000002445 A 20000115, No pp. given (Korean). CODEN:

KRXXA7. APPLICATION: KR 1998-23200 19980619.

AB An organic electrolyte for a lithium second cell and a lithium second cell are provided to improve the characteristic of charging and discharging at a low temperature and a stability at a high temperature

The organic electrolyte for a lithium second cell and the lithium second cell are comprised the steps of: putting a reagent bottle containing ethylene carbonate into an elec. mantle and heating at a 70 to 80° to fluidize; adding up LiPF<sub>6</sub> and N-methylcaprolactam into a bottle and shaking to perfectly dissolve; manufacturing the organic electrolyte by adding up dimethylmalonate after putting the fluidized ethylene carbonate.

IT 7439-93-2, Lithium, processes

RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PROC (Process)  
(organic electrolyte for lithium second cell)

RN 7439-93-2 HCAPLUS

CN Lithium (CA INDEX NAME)

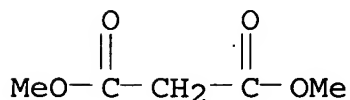
Li

IT 108-59-8, dimethylmalonate 21324-40-3, Lithium hexafluorophosphate

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(organic electrolyte for lithium second cell containing)

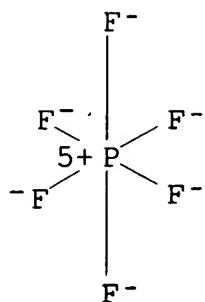
RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

- IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 23  
 IT 7439-93-2, Lithium, processes  
 RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PROC (Process)  
 (organic electrolyte for lithium second cell)  
 IT 96-49-1, Ethylene carbonate 108-59-8, dimethylmalonate  
 2556-73-2, N-Methylcaprolactam 21324-40-3, Lithium hexafluorophosphate  
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (organic electrolyte for lithium second cell containing)
- L53 ANSWER 7 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
 2001:524704 Document No. 135:114408 Photoelectrochemical cell comprising polymer electrolyte composition formed by polymerizing ionic liquid crystal monomer. Ono, Michio (Fuji Photo Film Co., Ltd., Japan). Eur. Pat. Appl. EP 1116769 A2 20010718, 43 pp.  
 DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-100999 20010117. PRIORITY: JP 2000-8054 20000117.
- AB Disclosed is an electrolyte composition comprising a polymer compound formed by polymerizing an ionic liquid crystal monomer containing at least one polymerizable group. Also disclosed are an electrochem. cell, a nonaq. secondary cell and a photoelectrochem. cell, each comprising the electrolyte composition In accordance with the present invention, an electrolyte which does not substantially volatilize and exhibits

excellent charge-transporting properties can be obtained, making it possible to obtain a photoelectrochem. cell having excellent photoelec. conversion properties and less deterioration of properties with time. Further, a **lithium ion**-conducting material having an extremely high ionic conductivity at low temps. can be obtained.

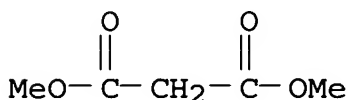
IT 108-59-8, Dimethyl malonate 90076-65-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(in preparation of ionic liquid crystal monomer containing polymerizable group)

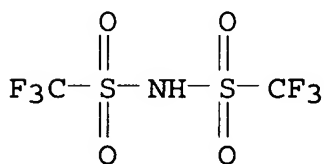
RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM C09K019-00

ICS C09K019-38; H01G009-20

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 72

IT 98-59-9, p-Toluenesulfonyl chloride 104-15-4, reactions

108-59-8, Dimethyl malonate 112-29-8, 1-Bromodecane

629-11-8, Hexamethylene glycol 814-68-6, 2-Propenoyl chloride

872-85-5, Pyridine-4-aldehyde 1122-58-3 2615-15-8, Hexaethylene

glycol 3943-97-3 7681-82-5, Sodium iodide, reactions

10041-02-8 14104-20-2, Silver tetrafluoroborate 53463-68-6,

## 10-Bromodecanol 90076-65-6

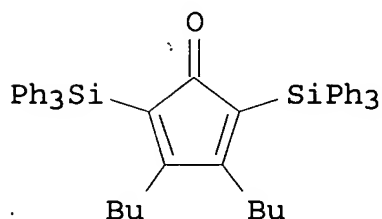
RL: RCT (Reactant); RACT (Reactant or reagent)

(in preparation of ionic liquid crystal monomer containing  
polymerizable  
group)

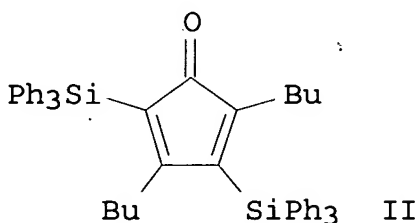
L53 ANSWER 8 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

2000:803531 Document No. 134:147326 Inter- and intramolecular  
carbonylative alkyne-alkyne coupling reaction mediated by cobalt  
carbonyl complex. Shibata, T.; Yamashita, K.; Takagi, K.; Ohta, T.;  
Soai, K. (Department of Chemistry, Faculty of Science, Okayama  
University, Tsushima, Okayama, 700-8530, Japan). Tetrahedron,  
56(47), 9259-9267 (English) 2000. CODEN: TETRAB. ISSN: 0040-4020.  
OTHER SOURCES: CASREACT 134:147326. Publisher: Elsevier Science  
Ltd..

GI



I



II

AB Inter- and intramol. carbonylative coupling reactions between  
alkynes possessing diphenylallylsilyl groups mediated by dicobalt  
carbonyl complexes under argon atmospheric gave mono- and bicyclic  
cyclopentadienones in high yields. Thus, reaction of  
BuC.tplbond.CSiPh3 (I) and the hexacarbonyldicobalt complex of I in  
toluene at 120° gave 77% of a 3.5:1 mixture of  
cyclopentadienones II and III.

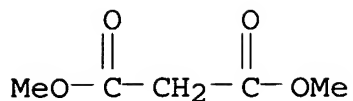
IT 108-59-8, Dimethyl malonate

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of disilylcyclopentadienones via intermol. and intramol.  
cycloaddn./coupling reactions of silyl alkynes and  
hexacarbonyl(silyl alkyne)dicobalt complexes)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



CC 24-4 (Alicyclic Compounds)

Section cross-reference(s): 29

IT 76-86-8, Chlorotriphenylsilane 80-10-4, Dichlorodiphenylsilane

108-59-8, Dimethyl malonate 144-79-6,

Chlorodiphenylmethoxysilane 693-02-7, 1-Hexyne 871-84-1,

1,7-Octadiyne 1730-04-7, 1,8-Diiodonaphthalene 2396-63-6,

1,6-Heptadiyne 2396-65-8, 1,8-Nonadiyne 4028-23-3,

Allylchlorodimethylsilane 4440-01-1, Phenylacetylene

lithium salt, 6921-27-3, Dipropargyl ether

10210-68-1, Dicobalt octacarbonyl 16466-97-0, 1-Propynylmagnesium

bromide 18419-53-9, Chlorodiphenylvinylsilane 37566-51-1

58479-61-1, tert-Butylchlorodiphenylsilane 65032-27-1,

Ethynylmagnesium chloride 87066-07-7 212125-01-4 212125-02-5

212125-03-6 212125-04-7 212125-05-8 212125-08-1 212125-27-4

212125-28-5 212125-29-6 324000-48-8

RL: RCT (Reactant); RACT (Reactant or reagent)

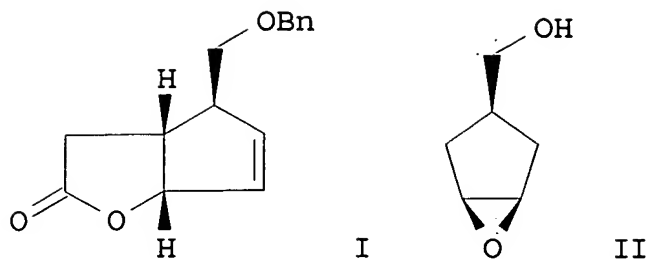
(preparation of disilylcyclopentadienones via intermol. and intramol. cycloaddn./coupling reactions of silyl alkynes and hexacarbonyl(silyl alkyne)dicobalt complexes)

L53 ANSWER 9 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

1999:781543 Document No. 132:222279 Mechanism and applications of lithium amide-induced asymmetric rearrangements of 4-substituted and 4,4-disubstituted cyclopentene oxides to cyclopentenols. Hodgson, David M.; Gibbs, Andrew R.; Drew, Michael G. B. (Department of Chemistry, Dyson Perrins Laboratory, South Parks Road, University of Oxford, Oxford, OX1 3QY, UK). Journal of the Chemical Society, Perkin Transactions 1: Organic and Bio-Organic Chemistry (24), 3579-3590 (English) 1999. CODEN: JCPRB4. ISSN: 0300-922X. Publisher: Royal Society of Chemistry.

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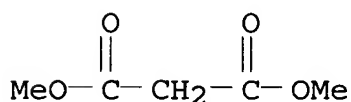
AB The preparation and Li amide-induced rearrangements of 1,2-dideuterated 4-substituted cyclopentene oxides are described, providing insight into the deprotonation mechanisms operating in such systems. Highly enantioselective syntheses of 4-substituted cis-4-hydroxymethylcyclopent-2-en-1-ols are described. Also described are asym. syntheses of prostaglandin precursor I and (+)-iridomyrmecin via highly enantioselective rearrangement of the epoxide II and subsequent Ireland-Claisen rearrangement.

IT 108-59-8, Dimethyl malonate

RL: RCT (Reactant); RACT (Reactant or reagent)  
(conversion to synthetic intermediate for mechanistic study;  
mechanism and applications of lithium amide-induced asym.  
rearrangements of 4-substituted and 4,4-disubstituted  
cyclopentene oxides to cyclopentenols)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



CC 24-4 (Alicyclic Compounds)

Section cross-reference(s): 22, 26, 75

IT 108-59-8, Dimethyl malonate

RL: RCT (Reactant); RACT (Reactant or reagent)  
(conversion to synthetic intermediate for mechanistic study;  
mechanism and applications of lithium amide-induced asym.  
rearrangements of 4-substituted and 4,4-disubstituted  
cyclopentene oxides to cyclopentenols)

IT 4111-54-0, 2-Propanamine, N-(1-methylethyl)-, lithium salt

RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent);  
USES (Uses)

(rearrangement catalyst; mechanism and applications of lithium amide-induced asym. rearrangements of 4-substituted and 4,4-disubstituted cyclopentene oxides to cyclopentenols)

L53 ANSWER 10 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

1999:325545 Document No. 130:340629 Organic electrolyte solutions and secondary lithium batteries using the solutions. Lee, Doo-Yon; Joo, Suk-Kwang; Sohn, Young-Soo; Chung, Bok-Hwan (Samsung Electronics Co., Ltd., S. Korea). Jpn. Kokai Tokkyo Koho JP 11135148 A 19990521 Heisei, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-251341 19980904. PRIORITY: KR 1997-45813 19970904; KR 1998-35848 19980901.

AB The electrolyte solns. have a Li salt dissolved in an organic solvent mixture containing solvents having high dielec. constant, solvents having low viscosity, and  $\text{ROCO}(\text{CH}_2)_x\text{CO}_2\text{R}'$ , where R and R' = linear or cyclic C1-3 alkyl group and x = integer 1-4. The batteries using the electrolyte solns. have Li containing metal oxide or sulfide cathodes and Li, Li alloy, or carbonaceous anodes.

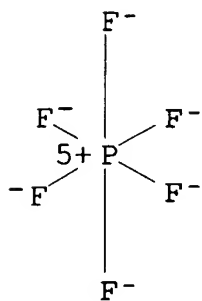
IT 21324-40-3, Lithium hexafluorophosphate 90076-65-6

RL: DEV (Device component use); USES (Uses)

(comps. of electrolyte solvent mixts. for secondary lithium batteries)

RN 21324-40-3 HCAPLUS

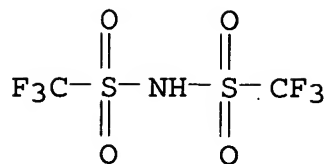
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

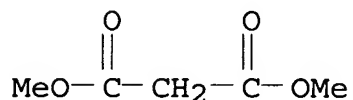
RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IT 108-59-8, Dimethyl malonate  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (compns. of electrolyte solvent mixts. for secondary lithium  
 batteries)  
 RN 108-59-8 HCAPLUS  
 CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 IT 21324-40-3, Lithium hexafluorophosphate 90076-65-6  
 132404-42-3 132843-44-8  
 RL: DEV (Device component use); USES (Uses)  
 (compns. of electrolyte solvent mixts. for secondary lithium  
 batteries)  
 IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
 105-53-3, Diethyl malonate 105-58-8, Diethyl carbonate 106-65-0,  
 Dimethyl succinate 108-32-7, Propylene carbonate 108-59-8  
 , Dimethyl malonate 109-99-9, Thf, uses 110-71-4,  
 1,2-Dimethoxyethane 616-38-6, Dimethyl carbonate 623-53-0, Ethyl  
 methyl carbonate 627-93-0, Dimethyl adipate 1119-40-0, Dimethyl  
 glutarate  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (compns. of electrolyte solvent mixts. for secondary lithium  
 batteries)

L53 ANSWER 11 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
 1999:113627 Document No. 130:139098 A process for the preparation of  
 cyclopropylacetylene. Fortunak, Joseph M.; Wang, Zhe; Yin, Jianguo  
 (du Pont Pharmaceuticals Company, USA). PCT Int. Appl. WO 9906341

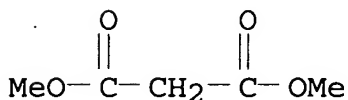
A1 19990211, 26 pp. DESIGNATED STATES: W: AU, BR, CA, CN, CZ, EE, HU, IL, JP, KR, LT, LV, MX, NO, NZ, PL, RO, SG, SI, SK, UA, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1998-US15765 19980729. PRIORITY: US 1997-54402 19970731.

AB Cyclopropylacetylene, an essential reagent in the asym. synthesis of (S)-6-chloro-4-cyclopropylethynyl-4-trifluoromethyl-1,4-dihydro-2H-3,1-benzoxazin-2-one an HIV reverse transcriptase inhibitor, is prepared in high yield and selectivity on an industrial scale from readily available starting materials by the condensation of cyclopropanecarboxaldehyde with malonic acid to form 3-cyclopropylacrylic acid, the 3-cyclopropylacrylic acid is halogenated to form (E,Z)-1-halo-2-cyclopropylethylenes (e.g., 1-bromo-2-cyclopropylethylene), and the (E,Z)-1-halo-2-cyclopropylethylenes are dehydrohalogenated to form cyclopropylacetylene.

IT 7439-93-2D, Lithium, alkoxides, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (a process for the preparation of cyclopropylacetylene)  
 RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

Li

IT 108-59-8, Dimethyl malonate  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (a process for the preparation of cyclopropylacetylene)  
 RN 108-59-8 HCAPLUS  
 CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



IC ICM C07C013-04  
 ICS C07C022-00  
 CC 24-2 (Alicyclic Compounds)  
 Section cross-reference(s): 63  
 IT 62-54-4, Calcium acetate 91-22-5, Quinoline, uses 91-66-7,  
 N,N-Diethylaniline 109-02-4, N-Methylmorpholine 110-86-1,  
 Pyridine, uses 110-89-4, Piperidine, uses 110-91-8, Morpholine,  
 uses 123-75-1, Pyrrolidine, uses 142-72-3, Magnesium acetate

280-57-9, 1,4-Diazabicyclo[2.2.2]octane 497-19-8, Carbonic acid disodium salt, uses 534-17-8, Cesium carbonate 546-89-4, Lithium acetate 554-13-2, Lithium carbonate 557-34-6, Zinc acetate 584-08-7 1310-58-3, Potassium hydroxide, uses 1310-65-2, Lithium hydroxide 1310-73-2, Sodium hydroxide, uses 1335-23-5, Copper iodide 7087-68-5, N,N-Diisopropylethylamine 7439-93-2D, Lithium, alkoxides, uses 7440-09-7D, Potassium, alkoxides, uses 7440-23-5D, Sodium, alkoxides, uses 11129-27-4, Copper bromide 21351-79-1, Cesium hydroxide 57951-36-7, Dimethylaminopyridine  
 RL: CAT (Catalyst use); USES (Uses)

(a process for the preparation of cyclopropylacetylene)

IT 105-53-3, Diethyl malonate 108-59-8, Dimethyl malonate 128-08-5, N-Bromosuccinimide 128-09-6, N-Chlorosuccinimide 141-82-2, Malonic acid, reactions 516-12-1, N-Iodosuccinimide 1489-69-6, Cyclopropanecarboxaldehyde 2033-24-1, 2,2-Dimethyl-1,3-dioxane-4,6-dione 16695-14-0, Propanedioic acid, monomethyl ester

RL: RCT (Reactant); RACT (Reactant or reagent)

(a process for the preparation of cyclopropylacetylene)

L53 ANSWER 12 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
 1998:552598 Document No. 129:295218 Remarkable effect of supporting electrolyte on the electroreductive cyclization of cyclic enones. Konno, Akinori; Bode, Heinrich; Little, R. Daniel (Faculty of Engineering, Shizuoka University, Hamamatsu, 432, Japan). Novel Trends in Electroorganic Synthesis, [Papers presented at the International Symposium on Electroorganic Synthesis], 3rd, Kurashiki, Japan, Sept. 24-27, 1997, Meeting Date 1997, 211-212. Editor(s): Torii, Sigeru. Springer: Tokyo, Japan. (English) 1998. CODEN: 66OMAK.

AB The stereoselectivity of electroreductive cyclization of butenolide 1 changes significantly depending upon the choice of supporting electrolyte. Metal coordination to the anionic intermediate of electroreductive cyclization is postulated.

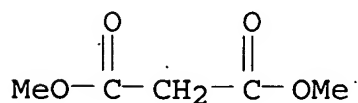
IT 108-59-8, Dimethyl malonate

RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)

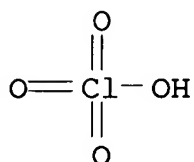
(electroreductive cyclization of cyclic enones in acetonitrile in presence of)

RN 108-59-8 HCAPLUS

CN Propanedioic acid; dimethyl ester (9CI) (CA INDEX NAME)



IT 7791-03-9, Lithium perchlorate  
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)  
(electroreductive cyclization of cyclic enones in presence of)  
RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

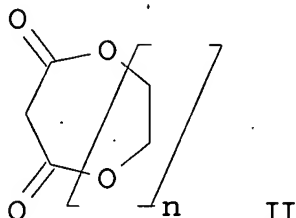
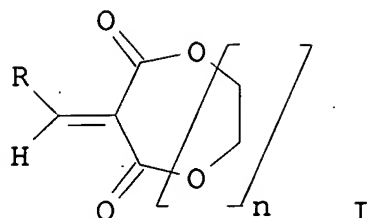


● Li

CC 72-9 (Electrochemistry)  
Section cross-reference(s): 22, 24  
IT 108-59-8, Dimethyl malonate  
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)  
(electroreductive cyclization of cyclic enones in acetonitrile in presence of)  
IT 75-05-8, Acetonitrile, uses 109-99-9, uses 1643-19-2,  
Tetrabutylammonium bromide 7791-03-9, Lithium perchlorate  
10034-81-8, Magnesium perchlorate 32248-43-4, Samarium diiodide  
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)  
(electroreductive cyclization of cyclic enones in presence of)

L53 ANSWER 13 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
1998:512871 Document No. 129:244754 Catalysis with inorganic cations.  
VIII. Macrocyclic-ylidenemalonates: synthesis spectroscopic  
investigation, and metal perchlorate catalysis of the Diels-Alder  
reaction. Desimoni, Giovanni; Faita, Giuseppe; Ricci, Marina;  
Righetti, PierPaolo (Dip. Chim. Org., Univ. Pavia, Pavia, 27100,  
Italy). Tetrahedron, 54(33), 9581-9602 (English) 1998. CODEN:  
TETRAB. ISSN: 0040-4020. OTHER SOURCES: CASREACT 129:244754.  
Publisher: Elsevier Science Ltd..

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AB Macrocyclic-ylidenemalonates (I;  $n=3-5$ ) have been prepared by Knoevenagel condensation of differently sized crown malonates II with several aldehydes. The spectroscopic investigations of derivs. I ( $R = 4\text{-Me}_2\text{NC}_6\text{H}_4$ ) in several solvents (acetone, acetonitrile, and dichloromethane) in the presence of sodium, lithium, barium, and magnesium perchlorate, evidenced, in some cases, the formation of different complexes, whose structure depends on the cation and on the dimension of the crown-ether unit. The  $\text{Mg(II)}$  complexation of I ( $n = 4,5$ ) involves both carbonyl oxygen atoms, and this specific interaction has a strong catalytic effect on the Diels-Alder reaction between I ( $R = 4\text{-ClC}_6\text{H}_4$ ;  $n = 4,5$ ) with cyclopentadiene.

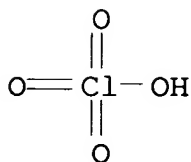
IT 7791-03-9, Lithium perchlorate

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)

(cycloaddn. catalyst; preparation, spectra, and metal perchlorate catalysis of Diels-Alder reaction of macrocyclic-ylidenemalonates)

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 108-59-8, Dimethyl malonate

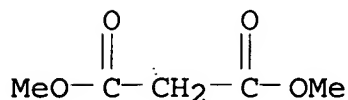
RL: RCT (Reactant); RACT (Reactant or reagent)

(synthetic reaction; preparation, spectra, and metal perchlorate

catalysis of Diels-Alder reaction of macrocyclic-ylidenemalonates)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



CC 22-5 (Physical Organic Chemistry)

Section cross-reference(s): 67, 78

IT 7791-03-9, Lithium perchlorate 10034-81-8, Magnesium perchlorate 13450-97-0, Strontium perchlorate 13465-95-7, Barium perchlorate 17341-24-1, Lithium cation, reactions 22537-39-9, Strontium dication, reactions 22541-12-4, Barium dication, reactions

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)

(cycloaddn. catalyst; preparation, spectra, and metal perchlorate catalysis of Diels-Alder reaction of macrocyclic-ylidenemalonates)

IT 78-84-2, Isobutyraldehyde 100-10-7, 4-N,N-Dimethylaminobenzaldehyde 104-55-2, Cinnamaldehyde 104-88-1, 4-Chlorobenzaldehyde, reactions 108-59-8, Dimethyl malonate 642-31-9, 9-Formylanthracene 1121-60-4, 2-Formylpyridine 56074-73-8 58484-44-9, 1,4,7,10-Tetraoxacyclotridecane-11,13-dione 58484-45-0, 1,4,7,10,13-Pentaoxacyclohexadecane-14,16-dione 58484-46-1, 1,4,7,10,13,16-Hexaoxacyclononadecane-17,19-dione

RL: RCT (Reactant); RACT (Reactant or reagent)

(synthetic reaction; preparation, spectra, and metal perchlorate catalysis of Diels-Alder reaction of macrocyclic-ylidenemalonates)

L53 ANSWER 14 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

1996:540879 Document No. 125:147150 Nonaqueous secondary batteries with improved electrolyte solvents. Hayashi, Katsuya; Tobishima, Shinichi; Yamaki, Junichi (Nippon Telegraph & Telephone, Japan). Jpn. Kokai Tokkyo Koho JP 08162154 A 19960621 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-324007 19941202.

AB In Li ion-intercalating batteries, the solvents comprise di-Me malonate. The batteries have high-voltage resistance, high energy d., and high charging-discharging capacity.

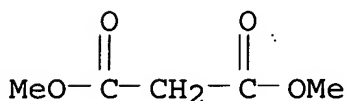
IT 108-59-8, Dimethyl malonate



RL: DEV (Device component use); USES (Uses)  
 (electrolyte solvents containing di-Me malonate for Li  
 ion batteries)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Battery electrolytes

(electrolyte solvents containing di-Me malonate for Li  
 ion batteries)

IT 108-59-8, Dimethyl malonate

RL: DEV (Device component use); USES (Uses)

(electrolyte solvents containing di-Me malonate for Li  
 ion batteries)

L53 ANSWER 15 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

1996:421021 Document No. 125:194788 Intramolecular Diels-Alder  
 reaction of cyclenic trienes: stereoselectivity and NMR structure  
 determination. Blond, Alain; Platzner, Nicole; Guy, Alain; Dhotel,  
 Helene; Serva, Laurence (Lab. de chimie organique structurale,  
 Paris, 75252, Fr.). Bulletin de la Societe Chimique de France,  
 133(3), 283-293 (English) 1996. CODEN: BSCFAS. ISSN: 0037-8968.  
 Publisher: Elsevier.

AB A series of trienes possessing an internally cyclenic dienophilic  
 group undergo thermal intramol. Diels-Alder (IMDA) reaction with  
 high selectivity for the cis-fused products. A concentrated solution of  
 LiClO<sub>4</sub> in di-Et ether catalyzes the IMDA reaction of cyclenic nitro  
 trienes, giving rise to the trans-fused compds. The stereochem.  
 outcome of these various processes are rationalized in terms of a  
 minimization of the steric interactions between the ring and the  
 chain on the one hand and the endo-stabilization from the nitro  
 group on the other. The structures of the cycloadducts have been  
 carefully determined by NMR <sup>1</sup>H and <sup>13</sup>C spectroscopy: dipolar  
 interactions, detected via nuclear Overhauser effects, and criteria  
 based on scalar coupling and moreover on chemical shifts have been  
 employed. Conformational preferences were observed

IT 7791-03-9, Lithium perchlorate

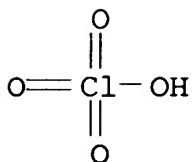
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)

(NMR structure determination, stereoselectivity, and intramol.

## Diels-Alder of cyclenic trienes)

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 108-59-8, Dimethyl malonate

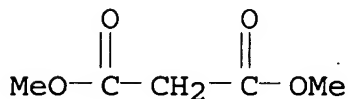
RL: RCT (Reactant); RACT (Reactant or reagent)

(NMR structure determination, stereoselectivity, and intramol.

Diels-Alder of cyclenic trienes)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



CC 22-3 (Physical Organic Chemistry)

Section cross-reference(s): 75

IT 7791-03-9, Lithium perchlorate

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(NMR structure determination, stereoselectivity, and intramol.

Diels-Alder of cyclenic trienes)

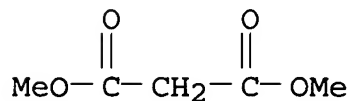
IT 64-19-7, Acetic acid, reactions 90-99-3, Benzhydryl chloride  
 99-33-2, 3,5-Dinitrobenzoyl chloride 105-53-3, Diethyl malonate  
 108-59-8, Dimethyl malonate 110-83-8, Cyclohexene,  
 reactions 122-78-1, Phenylacetaldehyde 123-38-6,  
 Propionaldehyde, reactions 142-29-0, Cyclopentene 603-35-0,  
 reactions 688-73-3, Tributyltin hydride 7632-00-0 7726-95-6,  
 Bromine, reactions 15014-25-2, Dibenzyl malonate 16940-66-2,  
 Sodium borohydride 26628-22-8, Sodium azide 52022-82-9  
 180685-25-0 180685-26-1

RL: RCT (Reactant); RACT (Reactant or reagent)

(NMR structure determination, stereoselectivity, and intramol.

## Diels-Alder of cyclenic trienes)

- L53 ANSWER 16 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
 1996:259869 Document No. 125:32888 Asymmetric Michael Addition of Malonate Anions to Prochiral Acceptors Catalyzed by L-Proline Rubidium Salt. Yamaguchi, Masahiko; Shiraishi, Tai; Hirama, Masahiro (Graduate School of Science, Tohoku University, Sendai, 980-77, Japan). Journal of Organic Chemistry, 61(10), 3520-30 (English) 1996. CODEN: JOCEAH. ISSN: 0022-3263. OTHER SOURCES: CASREACT 125:32888. Publisher: American Chemical Society.
- AB L-Proline rubidium salt catalyzes the asym. Michael addition of malonate anions to prochiral enones and enals. This method can be applied to a wide range of substrates to give adducts with a predictable absolute configuration: (S)-adducts from (E)-enones/enals and (R)-adducts from cyclic (Z)-enones. Both the secondary amine moiety and the carboxylate moiety are critical for the catalytic activity and asym. induction. Varying the counteraction also affects the reaction course. High enantiomeric excesses were attained when di-tert-Bu malonate was added to (E)-enones in the presence of CsF. The stereochem. of the Michael reaction indicates that asym. induction takes place via enantioface discrimination involving the acceptor  $\alpha$ -carbon atom rather than the  $\beta$ -carbon atom.
- IT 108-59-8, Dimethyl malonate  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (asym. Michael addition of malonate anions to prochiral acceptors catalyzed by L-proline rubidium salt)
- RN 108-59-8 HCAPLUS
- CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



- CC 21-2 (General Organic Chemistry)
- IT 15383-56-9P, L-Proline sodium Salt 32378-14-6P 55378-71-7P,  
 L-Proline tetramethylammonium Salt, preparation 63399-23-5P,  
 L-Proline lithium Salt 71715-76-9P  
 121378-60-7P, L-Proline, monopotassium salt 150884-52-9P,  
 preparation 151600-44-1P, L-Proline rubidium Salt 177722-32-6P,  
 preparation 177722-33-7P, preparation 177722-35-9P, preparation  
 177722-37-1P, preparation 177722-38-2P, preparation  
 177722-39-3P, preparation 177722-40-6P, preparation  
 177722-41-7P, preparation 177722-42-8P, preparation  
 177722-43-9P, preparation 177770-86-4P, L-Proline cesium Salt

177770-87-5P 177770-88-6P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(asym. Michael addition of malonate anions to prochiral acceptors catalyzed by L-proline rubidium salt)

IT 79-46-9, 2-Nitropropane 105-53-3, Diethyl malonate  
 108-59-8, Dimethyl malonate 110-52-1, 1,4-Dibromobutane  
 123-73-9 541-16-2, Di-tert-butyl malonate 627-05-4,  
 1-Nitrobutane 930-68-7, 2-Cyclohexenone 1121-66-0,  
 2-Cycloheptenone 1694-31-1, tert-Butyl acetoacetate 1896-62-4  
 3102-33-8 6221-50-7 6728-26-3 13195-64-7, Diisopropyl malonate  
 15014-25-2, Dibenzyl malonate 18402-83-0 23356-96-9, L-Prolinol  
 25112-78-1 32397-56-1 50396-87-7 56161-62-7 56345-01-8,  
 (E)-2-Cyclopentadecenone

RL: RCT (Reactant); RACT (Reactant or reagent)

(asym. Michael addition of malonate anions to prochiral acceptors catalyzed by L-proline rubidium salt)

L53 ANSWER 17 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

1991:607479 Document No. 115:207479 The Michael addition of dimethyl malonate to  $\alpha,\beta$ -unsaturated aldehydes catalyzed by proline **lithium salt**. Yamaguchi, Masahiko; Yokota, Naoyuki; Minami, Toru (Dep. Appl. Chem., Kyushu Inst. Technol., Kitakyushu, 804, Japan). Journal of the Chemical Society, Chemical Communications (16), 1088-9 (English) 1991. CODEN: JCCCAT. ISSN: 0022-4936. OTHER SOURCES: CASREACT 115:207479.

AB In the presence of 10 mol% of proline **lithium salt**, Michael adducts were obtained from di-Me malonate and  $\alpha,\beta$ -unsatd. aldehydes in high yield.

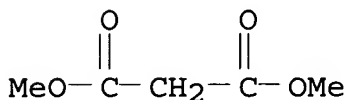
IT 108-59-8, Dimethyl malonate

RL: RCT (Reactant); RACT (Reactant or reagent)

(Michael addition reaction of, with unsatd. aldehydes, catalysts for)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



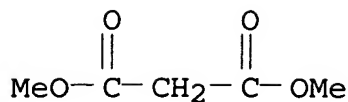
CC 23-17 (Aliphatic Compounds)

Section cross-reference(s): 22, 34

ST Michael addn catalyst proline **lithium salt**;  
 unsatd aldehyde Michael addn methyl malonate

IT Michael reaction catalysts

- (proline lithium salt, for di-Me malonate with unsatd. aldehydes, mechanism with)
- IT Aldehydes, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
( $\alpha,\beta$ -unsatd., Michael addns. of, with di-Me malonate, proline lithium salt as catalyst for)
- IT 108-59-8, Dimethyl malonate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Michael addition reaction of, with unsatd. aldehydes, catalysts for)
- IT 123-75-1, Pyrrolidine, uses and miscellaneous 147-85-3, L-Proline, uses and miscellaneous 44638-17-7, L-Valine lithium salt 63399-23-5, L-Proline lithium salt  
RL: CAT (Catalyst use); USES (Uses)  
(catalyst, for Michael addition of di-Me malonate to unsatd. aldehydes)
- L53 ANSWER 18 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
1988:639121 Document No. 109:239121 Electro-organic reactions. Part 34. Kinetic basicities of some electrogenerated organic dianions and the competition between protonation and reproportionation. Ling-Chung, Sim K.; Runciman, Peter J. I.; Sales, Keith D.; Utley, James H. P. (Dep. Chem., Queen Mary Coll., London, E1 4NS, UK). Journal of Electroanalytical Chemistry and Interfacial Electrochemistry, 250(2), 373-84 (English) 1988. CODEN: JEIEBC. ISSN: 0022-0728.
- AB Convenient and reliable double potential step chronoamperometry methods are described for measurement of the rates of protonation of 9-fluorenylidene dianions by C acids. The rates of protonation are shown to be insensitive to competing base-catalyzed enolization of the C acid. Comparison of exptl. i-t transients with those simulated for plausible mechanisms shows that although the measured protonation rate consts. are affected by allowing for rapid reproportionation, they are all affected in a similar manner. In contrast, ion-pairing or complexation effects are significant; protonation rate differences caused by varying cation:dianion interactions were measured and explained. For the dianion of di-Et 4,5-diazafluoren-9-ylidene)malonate a 1:2 complex is formed with Na<sup>+</sup> and its formation constant in DMSO was measured as  $1.7 \times 10^8$ .
- IT 108-59-8, Dimethyl malonate  
RL: PRP (Properties)  
(protonation by, kinetics of, of electrogenerated dianions of fluorenylidene or azafluorenylidene compds.)
- RN 108-59-8 HCAPLUS  
CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



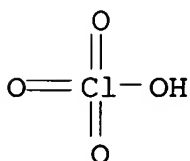
IT 7791-03-9

RL: PRP (Properties)

(protonation kinetics of electrogenerated  
diethyl(diazafluorenylidene)malonate dianion in presence of)

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

CC 72-2 (Electrochemistry)

Section cross-reference(s): 22, 68

IT 108-59-8, Dimethyl malonate 123-54-6, 2,4-Pentanedione,  
reactions 117666-40-7

RL: PRP (Properties)

(protonation by, kinetics of, of electrogenerated dianions of  
fluorenylidene or azafluorenylidene compds.)

IT 1923-70-2, Tetrabutylammonium perchlorate 7601-89-0, Sodium  
perchlorate 7791-03-9

RL: PRP (Properties)

(protonation kinetics of electrogenerated  
diethyl(diazafluorenylidene)malonate dianion in presence of)

L53 ANSWER 19 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

1988:629726 Document No. 109:229726 Process for the preparation of  
tert.-alkyl esters. Frei, Urs; Kirchmayr, Rudolf (Ciba-Geigy A.-G.,  
Switz.). Eur. Pat. Appl. EP 278914 A2 19880817, 7 pp. DESIGNATED  
STATES: R: AT, CH, DE, GB, IT, LI. (German). CODEN: EPXXDW.  
APPLICATION: EP 1988-810074 19880208. PRIORITY: CH 1987-534  
19870213.

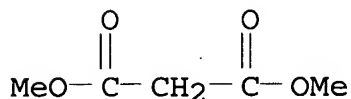
AB The title compds. are prepared by transesterification in the presence  
of base catalysts. For example, reaction of 1 mol di-Me succinate  
with tert-amyl alc. (11 mol) in the presence of 0.7 g Li at reflux

with removal of MeOH gave di-tert-amyl succinate.

IT 7439-93-2, uses and miscellaneous  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalyst, for transesterification of primary and secondary alkyl esters)  
 RN 7439-93-2 HCAPLUS  
 CN Lithium (CA INDEX NAME)

Li

IT 108-59-8  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (transesterification of)  
 RN 108-59-8 HCAPLUS  
 CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)

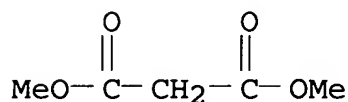


IC ICM C07C067-03  
 ICS C07C069-40; C07C069-78; C07C069-24; C07C069-34; C07C069-76  
 CC 21-2 (General Organic Chemistry)  
 IT 556-91-2, Aluminum tert-butoxide 818-08-6, Dibutyltin oxide  
 865-47-4, Potassium-tert-butoxide 7439-93-2, uses and  
 miscellaneous 7440-23-5, Sodium, uses and miscellaneous  
 7782-89-0, Lithium amide  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalyst, for transesterification of primary and secondary alkyl esters)  
 IT 93-58-3 93-60-7 96-32-2 99-75-2 106-65-0 106-70-7  
 106-79-6 108-59-8 111-82-0 112-61-8 120-61-6  
 553-90-2 611-13-2 1119-40-0 1459-93-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (transesterification of)

L53 ANSWER 20 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
 1988:492313 Document No. 109:92313 Diastereoselective protonation by  
 carbanions. Gerlach, Uwe; Huenig, Siegfried (Inst. Org. Chem.,  
 Univ. Wuerzburg, Wuerzburg, D-8700, Fed. Rep. Ger.). Tetrahedron  
 Letters, 28(47), 5805-8 (German) 1987. CODEN: TELEAY. ISSN:  
 0040-4039. OTHER SOURCES: CASREACT 109:92313.  
 AB Despite very small side differentiation in the Li

salt, the ratio of cis- trans- 1-tert-butyl-4-cyanocyclohexane can be shifted from 41:59 to 85:15 by variation of the proton source.

- IT 108-59-8, Dimethyl malonate  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (protonation by, of lithiobutylcyclohexanecarbonitrile, stereochem. of)  
 RN 108-59-8 HCAPLUS  
 CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



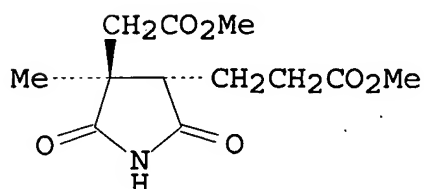
- CC 24-5 (Alicyclic Compounds)  
 ST butylcyclohexanecarbonitrile **lithium salt**  
 protonation stereochem; cyclohexanecarbonitrile dimethylethyl lithium protonation stereochem  
 IT Stereochemistry  
 (of protonation of tert-butylcyclohexanecarbonitrile **lithium salt**)  
 IT Protonation and Proton transfer reaction  
 (of tert-butylcyclohexanecarbonitrile **lithium salt**, stereochem. of)  
 IT 12408-02-5  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (protonation and Proton transfer reaction, of tert-butylcyclohexanecarbonitrile **lithium salt**, stereochem. of)  
 IT 64-18-6, Formic acid, reactions 64-19-7, Acetic acid, reactions 67-56-1, Methanol, reactions 75-65-0, reactions 75-98-9 79-46-9, 2-Nitropropane 91-10-1, 2,6-Dimethoxyphenol 105-53-3 108-59-8, Dimethyl malonate 108-95-2, Phenol, reactions 123-54-6, 2,4-Pentanedione, reactions 141-97-9, Ethyl acetoacetate 527-60-6, 2,4,6-Trimethylphenol 609-08-5, Diethyl methylmalonate 732-26-3 811-98-3, Tetradeuterium methanol 1118-71-4 7732-18-5, Water, reactions 7789-20-0, Deuterium oxide  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (protonation by, of lithiobutylcyclohexanecarbonitrile, stereochem. of)

L53 ANSWER 21 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
 1988:150122 Document No. 108:150122 Synthetic studies relevant to biosynthetic research on vitamin B12. Part 5. Synthesis of (RS)-ring-B imide. Battersby, Alan R.; Westwood, Steven W. (Chem.



Lab., Univ. Cambridge, Cambridge, CB2 1EW, UK). Journal of the Chemical Society, Perkin Transactions 1: Organic and Bio-Organic Chemistry (1972-1999) (8), 1679-87 (English) 1987. CODEN: JCPRB4. ISSN: 0300-922X. OTHER SOURCES: CASREACT 108:150122.

GI



AB Future biosynthetic research on vitamin B12 depends on the synthesis of a family of isobacteriochlorin pigments. A key building block required for this work is 2-(2-methoxycarbonylethyl)-3-methoxycarbonylmethyl-3-methylsuccinimide (I), usually called the ring-B imide. A practical synthesis of the racemic I is described which can yield multigram quantities of the product.

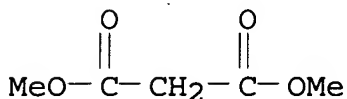
IT 108-59-8, Dimethyl malonate

RL: PROC (Process)

(Michael addition of, to enol phosphates)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



CC 26-7 (Biomolecules and Their Synthetic Analogs)

Section cross-reference(s): 33

IT 108-59-8, Dimethyl malonate 42726-73-8, tert-Butyl methyl malonate

RL: PROC (Process)

(Michael addition of, to enol phosphates)

IT 79-08-3, Bromoacetic acid

RL: PROC (Process)

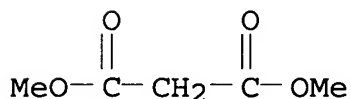
(lithium salt formation of)

L53 ANSWER 22 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

1988:132313 Document No. 108:132313 Preparation of 4-aminobutanoic acid derivatives as intermediates for antihypertensive statine

analogs. Descamps, Marcel; Nisato, Dino; Verstraeten, Walter (SANOFI, Fr.). Eur. Pat. Appl. EP 225311 A2 19870610, 9 pp. DESIGNATED STATES: R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE. (French). CODEN: EPXXDW. APPLICATION: EP 1986-870177 19861201. PRIORITY: FR 1985-17805 19851202.

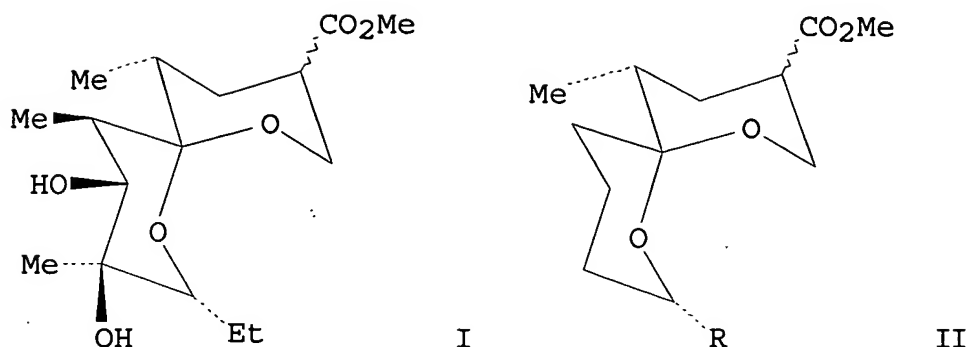
- AB RNHCHR2CH(OH)CH2CO2R1 [I; R = protecting group; R1 = H, alkali metal, e.g., Li, Na, K, or a labile group; R2 = (substituted) Ph, cyclohexyl], useful for the preparation of potentially antihypertensive statine analogs, are prepared L-2-(tert-butoxycarbonylamino)-2-phenylacetic imidazolidine, prepared by condensation of the parent acid with 1,1'-thionyl-diimidazole, was treated with the Mg enolate of CH2(CO2Me)2 in THF/Me2SO at ambient temperature for 4 h to give, after acid hydrolysis, Me (4S)-3-oxo-4-(tert-butoxycarbonylamino)-4-phenylbutanoate, whose Na salt was hydrogenated over Raney Ni to give the Me ester of (3S,4S)- and (3R,4S)-3-hydroxy-4-(tert-butoxycarbonylamino)-4-phenylbutanoate (II).
- IT 108-59-8, Dimethyl malonate  
RL: PROC (Process)  
(conversion of, into magnesium enolate)
- RN 108-59-8 HCAPLUS
- CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



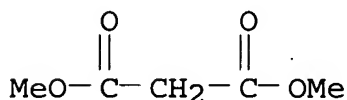
- IC ICM C07C125-065
- CC 34-2 (Amino Acids, Peptides, and Proteins)  
Section cross-reference(s): 2
- IT 108-59-8, Dimethyl malonate  
RL: PROC (Process)  
(conversion of, into magnesium enolate)

L53 ANSWER 23 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
1987:137708 Document No. 106:137708 The addition of electrophiles on ester enolates containing an oxygen in the  $\beta$ -position. A stereoelectronically controlled reaction. Caron, Maurice; Kawamata, Takeshi; Ruest, Luc; Soucy, Pierre; Deslongchamps, Pierre (Fac. Sci., Univ. Sherbrooke, Sherbrooke, QC, J1K 2R1, Can.). Canadian Journal of Chemistry, 64(9), 1781-7 (English) 1986. CODEN: CJCHAG. ISSN: 0008-4042. OTHER SOURCES: CASREACT 106:137708.

GI



- AB The enolate anion derived from spiro ketal Me esters I and II (R = H, Et) reacts with electrophiles PhSeBr, MeI, O<sub>2</sub>, diiodine, MeSSMe, and PhSSPh to give, as the major product, the isomer resulting from an equatorial approach of the electrophilic reagent. This stereochem. controlled reaction is discussed in terms of stereoelectronic effects that increase the electron d. of the  $\alpha$  face of the enolate anion.
- IT 108-59-8, Dimethyl malonate  
 RL: PROC (Process)  
 (conversion of, to spirotetrahydropyran ester derivative)
- RN 108-59-8 HCAPLUS
- CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



- CC 22-3 (Physical Organic Chemistry)  
 Section cross-reference(s): 33
- IT 108-18-9, Diisopropylamine 1195-42-2, Cyclohexylisopropylamine  
 RL: PROC (Process)  
 (conversion of, to lithium salt)
- IT 108-59-8, Dimethyl malonate  
 RL: PROC (Process)  
 (conversion of, to spirotetrahydropyran ester derivative)

L53 ANSWER 24 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
 1985:405894 Document No. 103:5894 Catalyst system and process for production of an aldehyde at high efficiency. Wegman, Richard W.; Busby, David C. (Union Carbide Corp. , USA). U.S. US 4513151 A

19850423, 8 pp. (English). CODEN: USXXAM. APPLICATION: US  
1983-557271 19831202.

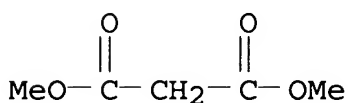
AB Treating organic or inorg. esters with CO or with synthesis gas  
100-300° and at 500-10000 psig in the presence of the  
homogeneous metal catalyst system containing LiI promoter gave  
aldehydes. Thus, AcOMe was treated with 1:1 H<sub>2</sub>-CO at 160°  
and at 5000 psig for 80 min in the presence of cobalt iodide, Bu<sub>3</sub>PO,  
and LiI to give MeCHO, paraldehyde, HOAc, CH<sub>4</sub>, and H<sub>2</sub>O. Selectivity  
for MeCHO was .apprx.95%. Also treated in this manner were Me  
isobutyrate, di-Me succinate, di-Me phthalate, HCO<sub>2</sub>Me, and B(OMe)<sub>3</sub>.

IT 108-59-8

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with synthesis gas, catalyst for)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



IC ICM C07C045-49

ICS C07C045-50

INCL 568484000

CC 23-14 (Aliphatic Compounds)

IT Catalysts and Catalysis

(metal complexes with lithium iodide  
promoter, for reaction of esters with synthesis gas)

IT 106-65-0 107-31-3 108-59-8 119-36-8 121-43-7

131-11-3 547-63-7 554-12-1

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with synthesis gas, catalyst for)

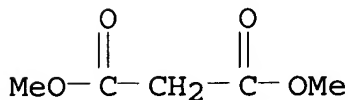
L53 ANSWER 25 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

1984:590782 Document No. 101:190782 Ion pairing and reactivity of  
enolate anions. 5. Thermodynamics of ionization of β-di- and  
tricarbonyl compounds in dimethyl sulfoxide solution and ion pairing  
of their alkali salts. Arnett, Edward M.; Maroldo, Stephen G.;  
Schilling, Steven L.; Harrelson, John A. (Dep. Chem., Duke Univ.,  
Durham, NC, 22706, USA). Journal of the American Chemical Society,  
106(22), 6759-67 (English) 1984. CODEN: JACSAT. ISSN: 0002-7863.

AB A variety of β-di- and triketones and esters with different  
substituents and conformations were deprotonated by the potassium  
salt of Me<sub>2</sub>SO in that solvent. Standard free energies, enthalpies, and  
entropies of ionization are derived from pK<sub>a</sub>'s and heats of  
deprotonation. The overall effects of structure variation for the

ketones and esters follow generally accepted patterns based on the merged results of many previous studies in various solvents: acyclic ketones are slightly more acidic than analogous esters, cyclic members of both series are more acidic than acyclic analogs, and alkyl substitution on the carbon bearing the acidic proton reduces acid strength while accumulation of carbonyl groups on the acidic carbon increases acidity. These trends are also followed in the gas phase and so are not the result of solvent effects. Although a good extrathermodynamic correlation is found for pKa's of ketones vs. pKa's of analogous esters and a fair correlation is found for  $\Delta G^\circ$  vs.  $\Delta H^\circ$ , an attempted isoequil. plot of  $\Delta H^\circ$  vs.  $\Delta S^\circ$  is a virtual random scatter of points. In view of the many stereoelectronic and solvation factors which may be affecting the acidities of these compds., interpreting variations of less than 2 kcal/mol were avoided in making comparisons between individual compds. However, the acidities of the Meldrum acids are so large compared either to acyclic diesters or to analogous dimedones that discussion seems to be justified in terms of Huisgen's anal. of dipole opposition in cis vs. trans ester conformations. Ion-pairing consts. (Kassoc) for the alkali enolates were obtained for several cases both by conductance and the Bordwell titration method with good agreement in most of those cases studied by both methods. In terms of log Kassoc, there is a generally good correlation between the interaction of potassium and sodium ions with the enolate anions reported here, but the **lithium ion** and the proton (pKa's) show no correlation with the larger cations. The complexities of this extensive anal. of relatively simple and well-defined enolates provide a warning against the interpretation of relatively small rate or product differences (e.g., <2 kcal/mol) of more complex enolates under less controlled conditions in terms of ad hoc structure-reactivity arguments.

IT 108-59-8  
 RL: PRP (Properties)  
 (ionization of, in DMSO, thermodyn. of)  
 RN 108-59-8 HCAPLUS  
 CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



CC 22-4 (Physical Organic Chemistry)  
 IT 93-91-4 105-53-3 108-59-8 120-46-7 123-54-6,  
 properties 126-81-8 609-02-9 765-69-5 815-57-6 815-68-9

1118-71-4 1125-11-7 1186-73-8 1540-34-7 1755-15-3  
 3709-18-0 17216-65-8 26717-67-9

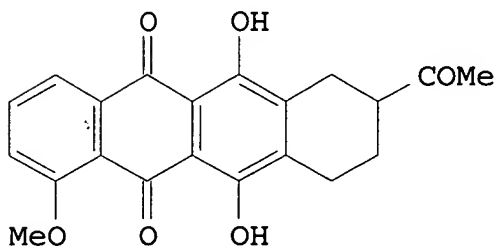
RL: PRP (Properties)

(ionization of, in DMSO, thermodyn. of)

L53 ANSWER 26 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

1979:38716 Document No. 90:38716 A regiospecific synthesis of the anthracycline aglycons, daunomycinone and adriamycinone. Swenton, John S.; Raynolds, Peter W. (Dep. Chem., Ohio State Univ., Columbus, OH, USA). Journal of the American Chemical Society, 100(19), 6188-95 (English) 1978. CODEN: JACSAT. ISSN: 0002-7863.

GI



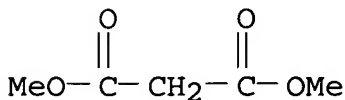
AB A synthesis of (+)-7,9-deoxydaunomycinone was accomplished in 14% overall yield from the known 3-bromo-2,5-dimethoxybenzaldehyde. This compound can be converted by known steps into daunomycin and adriamycin. The key step involves the regiospecific coupling of the eventual AB-ring system in the form of a lithiated quinone bis-ketal to di-Me 3-methoxyphthalate. The utility of the analogous 2-lithio-1,4-dimethoxytetralin derivative coupling to di-Me 3-methoxyphthalate was also studied and the reaction product converted to I.

IT 108-59-8

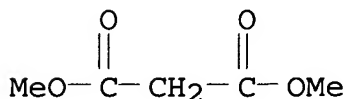
RL: RCT (Reactant); RACT (Reactant or reagent)  
 (condensation of, with benzaldehyde derivative)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



- CC 26-6 (Condensed Aromatic Compounds)  
 IT 108-59-8  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (condensation of, with benzaldehyde derivative)
- IT 68216-77-3P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and condensation of, with di-Me sulfoxide lithium salt)
- IT 68216-71-7P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation and reaction of, with di-Me sulfoxide lithium salt)
- L53 ANSWER 27 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN  
 1973:500725 Document No. 79:100725 Effect of lithium salts on the urinary excretion of dicarboxylic acids. Lee, Christopher R.; Pollitt, Rodney J. (Univ. Dep. Psychiatr., Middlewood Hosp., Sheffield, UK). Biochemical Society Transactions, 1(1), 108-9 (English) 1973. CODEN: BCSTB5. ISSN: 0300-5127.
- AB Treatment of patients with lithium carbonate [554-13-2] (3 .tim. 250 mg/day) increased the urinary excretion of a number of dicarboxylic acids with a chain length between C4-C6, especially succinate [110-15-6], glutarate [110-94-1], and adipate [124-04-9]. This may be due to an action on the transport of these compds. or to an effect on the tricarboxylic acid cycle.
- IT 108-59-8  
 RL: BIOL (Biological study)  
 (urinary excretion of, lithium carbonate effect on)
- RN 108-59-8 HCAPLUS  
 CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



- CC 1-6 (Pharmacodynamics)  
 IT 108-59-8 110-15-6, biological studies 110-17-8, biological studies 110-94-1 111-16-0 124-04-9, biological studies 328-50-7 505-48-6 1187-99-1 6915-15-7 13095-48-2  
 RL: BIOL (Biological study)  
 (urinary excretion of, lithium carbonate effect on)
- L53 ANSWER 28 OF 28 HCAPLUS COPYRIGHT 2007 ACS on STN

1972:98898 Document No. 76:98898 Problem of the character of the carbon-lithium bond in some  $\alpha$ -lithium esters. Kriz, J.; Schmidt, P. (Inst. Macromol. Chem., Czech. Acad. Sci., Prague, Czech.). Tetrahedron, 28(4), 1033-41 (English) 1972. CODEN: TETRAB. ISSN: 0040-4020.

AB In  $\alpha$ -Li esters,  $R_1R_2C(Li)CO_2R_3$ , prepared in situ in solution, the C:O stretching vibration is shifted in varying degrees with respect to the nonmetallated analogs. According to MO LCAO SCF calcns., the magnitude of this shift indicates the degree of the ionic character of the C-Li bond.

IT 7439-93-2, properties

RL: PRP (Properties)

(bonds of, with carbon, energy and order of)

RN 7439-93-2 HCAPLUS

CN Lithium (CA INDEX NAME)

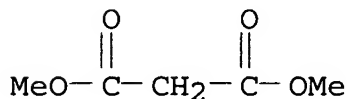
Li

IT 108-59-8

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with trityl lithium)

RN 108-59-8 HCAPLUS

CN Propanedioic acid, dimethyl ester (9CI) (CA INDEX NAME)



CC 22 (Physical Organic Chemistry)

IT 7439-93-2, properties

RL: PRP (Properties)

(bonds of, with carbon, energy and order of)

IT 101-41-7 105-45-3 108-59-8 547-63-7 554-12-1

609-02-9 3852-11-7 13423-03-5 16889-72-8 20487-40-5

26735-86-4 35717-08-9

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with trityl lithium)

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